



THE IMPERIAL ENCYCLOPEDIA AND DICTIONARY 272

A LIBRARY OF UNIVERSAL
KNOWLEDGE AND AN UN-
ABRIDGED DICTIONARY OF
THE ENGLISH LANGUAGE
UNDER ONE ALPHABET

IN FORTY VOLUMES

VOLUME 6
BRAVO—CALLUNA

NEW YORK HENRY G. ALLEN & COMPANY

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SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(-) is the mark dividing words respelt phonetically into syllables; ('), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā...mate, fate, fail, aye.....		māt, fāt, fāl, ā.
ă...mat, fat.....		măt, făt.
â...far, calm, father.....		fâr, kâm, fâ' thēr.
ã...care, fair.....		câr, fâr.
aw...fall, laud, law.....		fawł, lawd, law.
ē...mete, meat, feet, free.....		mēt, mēt, fēt, frē.
ě...met, bed.....		mět, běd.
é...her, stir, heard, cur.....		hēr, stēr, hērd, kēr.
î...pine, ply, height.....		pîn, plî, hît.
ï...pin, nymph, ability.....		pîn, nîmf, â-bîl'î-tî.
ō...note, toll, soul.....		nōt, tōl, sōl.
ô...not, plot.....		nôt, plôt.
ô...move, smooth.....		môv, smôth.
ö...Goethe (similar to e in her)...		gö'teh.
ow...noun, bough, cow.....		noun, bow, kow.
oy...boy, boil.....		boy, boyl.
û...pure, dew, few.....		pûr, dû, fû.
ÿ...bud, come, tough.....		bûd, kûm, tûf.
ú...full, push, good.....		fûl, pûsh, gûd.
ü...French plume, Scotch guid.....		plûm, gûd.
ch...chair, match.....		châr, mäch.
ch...German buch, Heidelberg, Scotch loch (guttural).....		bóch, hî' del-bērçh, löch.
g...game, go, gun.....		gām, gō, gŭn.
j...judge, gem, gin.....		jŭj, jēm, jîn.
k...king, cat, cot, cut.....		kîng, kăt, kôt, kŭt.
s...sit, scene, cell, city, cypress.....		sît, sēn, sèl, sît'î, sî'prēs.
sh...shun, ambition.....		shŭn, âm-bîsh' ŭn.
th...thing, breath.....		thîng, brēth.
th...though, breathe.....		thō, brēth.
z...zeal, maze, muse.....		zēl, māz, mŭz.
zh...azure, vision.....		ăzh'ēr, vîzh' ŭn.

ABBREVIATIONS USED IN THIS WORK.

a., or adj. .adjective
A.B. Bachelor of Arts
abbr. abbreviation, abbreviated
abl. or abla. .ablative
Abp. Archbishop
abt. about
Acad. Academy
acc. or ac. .accusative
accom.accommodated, accommodation
act.active
A.D.in the year of our Lord [*Anno Domini*]
Adj'tAdjutant
AdmAdmiral
adv. or ad. .adverb
A. F.Anglo-French
Ag.Silver [*Argentum*]
agri.agriculture
A. L.Anglo-Latin
Al.Aluminium
Ala.Alabama
Alb.Albanian
alg.algebra
A.M.before noon [*ante meridiem*]
A.M.Master of Arts
Am.Amos
Amer.America, -n
anat.anatomy, anatomical
anc.ancient, anciently
AN. M.in the year of the world [*Anno Mundi*]
anon.anonymous
antiq.antiquity, antiquities
aoraorist, -ic
app.appendix
appar.apparently
Apr.April
ArArabic
archarchitecture
archæol.archæology
arith.arithmetic
Ark.Arkansas
art.article
artil.artillery
AS.Anglo-Saxon
As.Arsenic
Assoc.Association
asst.assistant
astrol.astrology
astron.astronomy
attrib.attributive
atty.attorney
at. wt.atomic weight
AuGold [*Aurum*]

A.U.C.in the year of the building of the city (Rome) [*Annourbis conditæ*]
Aug.August
aug.augmentative
Aust.Austrian
A. V.authorized version [of Bible, 1611]
avoir.avoirdupois
BBoron
B.Britannic
b.born
BaBarium
Bart.Baronet
Bav.Bavarian
bl.; bbl.barrel; barrels
B.C.before Christ
B.C.L.Bachelor of Civil Law
B.D.Bachelor of Divinity
bef.before
Belg.Belgic
Beng.Bengali
Bi.Bismuth
biog.biography, biographical
biol.biology
B.L.Bachelor of Laws
Bohem.Bohemian
bot.botany, botanical
Bp.Bishop
Br.Bromine
BrazBrazilian
Bret.Breton
BrigBrigadier
Brit.British, Britannica
brobrother
Bulg.Bulgarian
bush.bushel, bushels
CCarbon
c.century
CaCalcium
Cal.California
Camb.Cambridge
Can.Canada
Cant.Canterbury
cap.capital
Capt.Captain
CardCardinal
carp.carpentry
Cath.Catholic
caus.causative
cav.cavalry
Cd.Cadmium
CeCerium
Celt.Celtic
cent.central
cf.compare [*confer*]
ch or chh.church

ABBREVIATIONS.

Chal.....	Chaldee	diff.....	different, difference
chap.....	chapter	dim.....	diminutive
chem.....	chemistry, chemical	dist....	district
Chin.....	Chinese	distrib..	distributive
Chron.....	Chronicles	div.....	division
chron.....	chronology	doz.....	dozen
Cl.....	Chlorine	Dr.....	Doctor
Class.....	Classical [= Greek and Latin]	dr.....	dram, drams
Co.....	Cobalt	dram.....	dramatic
Co.....	Company	Dut. or D..	Dutch
co.....	county	dwt.....	pennyweight
cog.....	cognate [with]	dynam or	
Col.....	Colonel	dyn.....	dynamics
Col.....	Colossians	E.....	Erbium
Coll.....	College	E. or e.....	East, -ern, -ward
colloq.....	colloquial	E. or Eng..	English
Colo.....	Colorado	Eccl.....	Ecclesiastes
Com.....	Commodore	eccl. or	{ ecclesiastical [af- eccles.... } fairs]
com.....	commerce, commer- cial	ed.....	
com.....	common		edited, edition, edi- tor
comp.....	compare	e.g.....	for example [<i>ex gratia</i>]
comp.....	composition, com- pound	E. Ind. or	{ East Indies, East E. I..... } Indian
compar.....	comparative	elect.....	
conch.....	conchology	Emp.....	Emperor
cong.....	congress	Encyc.....	Encyclopedia
Congl.....	Congregational	Eng. or E..	English
conj.....	conjunction	engin.....	engineering
Conn or Ct.	Connecticut	entom....	entomology
contr.....	contraction, con- tracted	env. ext..	envoy extraordinary
Cop.....	Coptic	ep.....	epistle
Cor.....	Corinthians	Eph.....	Ephesians
Corn.....	Cornish	Episc.....	Episcopal
corr.....	corresponding	eq. or =...	equal, equals
Cr.....	Chromium	equiv.....	equivalent
crystal.....	crystallography	esp.....	especially
Cs.....	Cæsium	Est.....	Esther
ct.....	cent	estab.....	established
Ct. or Conn.	Connecticut	Esthon....	Esthonian
Cu.....	Copper [<i>Cuprum</i>]	etc.....	and others like [<i>et cetera</i>]
cwt.....	a hundred weight	Eth.....	Ethiopic
Cyc.....	Cyclopedia	ethnog....	ethnography
D.....	Didymium	ethnol....	ethnology
D. or Dut..	Dutch	et seq.....	and the following [<i>et sequentia</i>]
d.....	died	etym.....	etymology
d. [l. s. d.]	penny, pence	Eur.....	European
Dan.....	Daniel	Ex.....	Exodus
Dan.....	Danish	exclam....	exclamation
dat.....	dative	Ezek.....	Ezekiel
dau.....	daughter	Ezr.....	Ezra
D. C.....	District of Columbia	F.....	Fluorine
D.C.L.....	Doctor of Civil [or Common] Law	F. or Fahr.	Fahrenheit
D.D.....	Doctor of Divinity	f. or fem..	feminine
Dec.....	December	F. or Fr....	French
dec.....	declension	fa.....	father
def.....	definite, definition	Fahr. or F.	Fahrenheit
deg.....	degree, degrees	far.....	farriery
Del.....	Delaware	Fe.....	Iron [<i>Ferrum</i>]
del.....	delegate, delegates	Feb.....	February
dem.....	democratic	fem or f..	feminine
dep.....	deputy	fig.....	figure, figuratively
dep.....	deponent	Fin.....	Finnish
dept.....	department	F.—L.....	French from Latin
deriv.....	derivation, deriva- tive	Fla.....	Florida
Deut.....	Deuteronomy	Flem.....	Flemish
dial.....	dialect, dialectal	for.....	foreign
diam....	diameter	fort.....	fortification
Dic.....	Dictionary	Fr. or F..	French
		fr.....	from

ABBREVIATIONS.

freq.....	frequentative	ind.....	indicative
Fris	Frisian	indef	indefinite
ft.....	foot, feet	Indo-Eur...	Indo-European
fut.....	future	inf.....	infantry
G. or Ger...	German	inf or infin.	infinitive
G.....	Glucinium	instr.....	instrument, -al
Ga.....	Gallium	int... ..	interest
Ga.....	Georgia	intens.....	intensive
Gael.....	Gaelic	interj. or	
Gal	Galatians	int.....	interjection
gal.....	gallon	interrog...	interrogative pro-
galv.....	galvanism, galvanic	noun	
gard.....	gardening	intr. or	
gen.....	gender	intrans...	intransitive
Gen.....	General	Io... ..	Iowa
Gen	Genesis	Ir.....	Iridium
gen.....	genitive	Ir.....	Irish
Geno.....	Genoese	Iran.....	Iranian
geog	geography	irr	irregular, -ly
geol.....	geology	Is.....	Isaiah
geom.....	geometry	It	Italian
Ger	German, Germany	Jan.....	January
Goth.....	Gothic	Jap.....	Japanese
Gov.....	Governor	Jas.....	James
govt.....	government	Jer.....	Jeremiah
Gr.....	Grand, Great	Jn.....	John
Gr.....	Greek	Josh.....	Joshua
gr.....	grain, grains	Jr.....	Junior
gram	grammar	Judg	Judges
Gr. Brit...	Great Britain	K.....	Potassium [<i>Kalium</i>]
Gris.....	Grisons	K.....	Kings [in Bible]
gun	gunnery	K.....	king
H.....	Hegira	Kan.....	Kansas
H.....	Hydrogen	Kt.....	Knight
h.....	hour, hours	Ky.....	Kentucky
Hab.....	Habakkuk	L.....	Latin
Hag.....	Haggai	L.....	Lithium
H. B. M....	His [or Her] Britan- nic Majesty	l. [l. s. d.],	{ pound, pounds or £..... } [sterling]
Heb.....	Hebrew, Hebrews	La.....	Lanthanum
her.....	heraldry	La.....	Louisiana
herpet.....	herpetology	Lam.....	Lamentations
Hg.....	Mercury [<i>Hydrar- gyrum</i>]	Lang.....	Languedoc
hhd.....	hogshhead, hogsheads	lang... ..	language
Hind.....	Hindustani, Hindu, or Hindi	Lap.....	Lapland
hist	history, historical	lat	latitude
Hon	Honorable	lb.; llb. or	{ pound ; pounds lbs..... } [weight]
hort.....	horticulture	Let.....	Lettish
Hos.....	Hosea	Lev.	Leviticus
Hung.....	Hungarian	LG.....	Low German
Hydros....	Hydrostatics	L.H.D.....	Doctor of Polite Lit- erature
I.....	Iodine	Lieut.....	Lieutenant
I.; Is.....	Island ; Islands	Lim	Limousin
Icel.....	Icelandic	Lin	Linnæus, Linnæan
ichth.....	ichthyology	lit	literal, -ly
Ida.....	Idaho	lit	literature
i.e.....	that is [<i>id est</i>]	Lith.. ...	Lithuanian
Ill.....	Illinois	lithog.....	lithograph, -y
illus.....	illustration	LL.....	Late Latin, Low Latin
impera or		LL.D.....	Doctor of Laws
impr.....	imperative	long.....	longitude
impers.....	impersonal	Luth.....	Lutheran
impf or imp	imperfect	M.....	Middle
impf. p. or		M.....	Monsieur
imp	imperfect participle	m.....	mile, miles
improp.....	improperly	m. or masc.	masculine
In.....	Indium	M.A.....	Master of Arts
in... ..	inch, inches	Macc. . . .	Maccabees
incept.....	inceptive	mach... ..	machinery
Ind	India, Indian	Mag.....	Magazine
Ind	Indiana		

ABBREVIATIONS.

Maj.....Major	N. A., or
Mal.....Malachi	N. Amer.North America, -n
Mal.....Malay, Malayan	nat.....natural
manuf.....manufacturing,	naut.....nautical
manufacturers	nav.....navigation, naval af-
Mar.....March	fairs
masc or m.masculine	Nb.....Niobium
Mass.....Massachusetts	N. C. or
mathmathematics, math-	N. Car...North Carolina
ematical	N. D.....North Dakota
Matt.....Matthew	Neb.....Nebraska
M.D.....Doctor of Medicine	neg.....negative
MD.....Middle Dutch	Neh.....Nehemiah
Md.....Maryland	N. Eng....New England
ME.....Middle English, or	neut or n...neuter
Old English •	Nev.....Nevada
Me.....Maine	N.Gr.....New Greek, Modern
mech.....mechanics, mechani-	Greek
cal	N. H.....New Hampshire
med.....medicine, medical	NHG.....New High German
mem.....member	[German]
mensur....mensuration	NiNickel
Messrs. or	N. J.....New Jersey
MM.....Gentlemen, Sirs	NL.....New Latin, Modern
metal.....metallurgy	Latin
metaph....metaphysics, meta-	N. Mex....New Mexico
physical	N. T., or
meteor....meteorology	N. Test...New Testament
Meth.....Methodist	N. Y.....New York [State]
Mex.....Mexican	nom.....nominative
Mg.....Magnesium	Norm. F...Norman French
M.Gr.....Middle Greek	North. E ..Northern English
MHG.....Middle High Ger-	Norw... ..Norwegian, Norse
man	Nov.....November
Mic.....Micah	Num.....Numbers
Mich.....Michigan	numis.....numismatics
mid.....middle [voice]	O.....Ohio
Milan.....Milanese	O.....Old
mid. L. or { Middle Latin, Me-	O.....Oxygen
ML.....} diæval Latin	Obad.....Obadiah
milit. or	obj.....objective
mil.... ..military [affairs]	obs. or †...obsolete
min.....minute, minutes	obsoles.....obsolescent
mineral....mineralogy	O.Bulg....Old Bulgarian or Old
Minn.....Minnesota	Slavic
Min. Plen..Minister Plenipoten-	Oct.....October
tiary	Odontog...odontography
Miss.....Mississippi	OE.....Old English
ML. or { Middle Latin, Me-	OF or
mid. L...} diæval Latin	O. Fr....Old French
MLG.....Middle Low German.	OHG.....Old High German
Mlle.....Mademoiselle	Ont.....Ontario
Mme.....Madam	opt... ..optics, optical
Mn.....Manganese	Or.....Oregon
Mo.....Missouri	ord.....order
Mo.....Molybdenum	ord.... ..ordnance
mod.....modern	org.....organic
Mont.....Montana	orig.....original, -ly
Mr.....Master [Mister]	ornith.....ornithology
Mrs.....Mistress [Missis]	Os.....Osmium
MS.; MSS..manuscript; manu-	OS.Old Saxon
scripts	O. T., or
Mt.....Mount, mountain	O. Test...Old Testament
mus.....music	Oxf.....Oxford
Mus.Doc...Doctor of Music	oz.....ounce, ounces
myth.....mythology, mytho-	P.....Phosphorus
logical	p.; pp.....page; pages
N.....Nitrogen	p., or part..participle
N. or n....North, -ern, -ward	Pa. or Penn.Pennsylvania
n.....noun	paint.....painting
n or neut...neuter	palæon....palæontology
Na.....Sodium [Natrium]	parl.....parliament
Nah.....Nahum	pass.....passive

ABBREVIATIONS.

pathol or	pt.....	past tense
path.....	pt.....	pint
Pb.....	Pt.....	Platinum
Pd.....	pub.....	published, publisher, publication
Penn or Pa.....	pwt.....	penny weight
perf.....	Q.....	Quebec
perh.....	qt.....	quart
Pers.....	qtr.....	quarter [weight]
pers.....	qu.....	query
persp.....	q.v.....	which see [quod vide]
pert.....	R.....	Rhodium
Pet.....	R.....	River
Pg. or Port.....	Rb.....	Rubidium
phar.....	R. Cath.....	Roman Catholic
PH.D.....	rec. sec.....	recording secretary
	Ref.....	Reformed
	refl.....	reflex
	reg.....	regular, -ly
	regt.....	regiment
	rel. pro. or	
	rel.....	relative pronoun
	repr.....	representing
	repub.....	republican
	Rev ..	Revelation
	Rev.....	The Reverend
	Rev. V.....	Revised Version
	rhet.....	rhetoric, -al
	R. I.....	Rhode Island
	R. N.....	Royal Navy
	Rom.....	Roman, Romans
	Rom.....	Romanic or Ro- mance
	Rom. Cath.	{ Roman Catholic Church
	Ch. or R.	
	C. Ch.....	
	r.r.....	railroad
	Rt. Rev ..	Right Reverend
	Ru.....	Ruthenium
	Russ.....	Russian
	r.w.....	railway
	S.....	Saxon
	S.....	Sulphur
	s.....	second, seconds
	s. [l. s. d.]..	shilling, shillings
	S. or s.....	South, -ern, -ward
	S. A. or	
	S. Amer.....	South America, -n
	Sam.....	Samaritan
	Sam.....	Samuel
	Sans, or	
	Skr.....	Sanskrit
	Sb.....	Antimony [<i>Stibium</i>]
	s.c.....	understand, supply, namely [<i>scilicet</i>]
	S. C. or	
	S. Car.....	South Carolina
	Scand.....	Scandinavian
	Scot.....	Scotland, Scotch
	scr.....	scruple, scruples
	Scrip.....	Scripture [s], Scrip- tural
	sculp.....	sculpture
	S. D.....	South Dakota
	Se.....	Selenium
	sec.....	secretary
	sec.....	section
	Sem.....	Semitic
	Sep.....	September
	Serv.....	Servian
	Shaks.....	Shakespeare
	Si.....	Silicon
philol.....		
philos.....		
phil. {		
or phil .. }		
phonog.....		
photog.....		
phren.....		
phys.....		
physiol.....		
Pied.....		
Pl.....		
pl. or plu.....		
Pl. D.....		
plupf.....		
P.M.....		
pneum.....		
P. O.....		
poet.....		
Pol.....		
pol. econ.....		
polit.....		
pop ..		
Port. or Pg.....		
poss.....		
pp.....		
pp.....		
p. pr.....		
Pr. or Prov.....		
pref.....		
prep.....		
Pres.....		
pres.....		
Presb.....		
pret.....		
prim.....		
priv.....		
prob.....		
Prof.....		
pron.....		
pron.....		
prop.....		
pros.....		
Prot.....		
Prov. or Pr.....		
Prov.....		
prov.....		
Prov. Eng.....		
Prus.....		
Ps.....		
psychol.....		

ABBREVIATIONS.

Sic.....	Sicilian	trigon.....	trigonometry
sing.....	singular	Turk.....	Turkish
sis.....	sister	typog.....	typography, typo- graphical
Skr. or		U.....	Uranium
Sans.....	Sanskrit	ult.....	ultimate, -ly
Slav.....	Slavonic, Slavic	Unit.....	Unitarian
Sn.....	Tin [<i>Stannum</i>]	Univ.....	Universalist
Soc.....	Society	Univ.....	University
Song Sol...	Song of Solomon	U. Presb...	United Presbyterian
Sp.....	Spanish	U. S.	United States
sp. gr.....	specific gravity	U. S. A....	United States Army
sq.....	square	U. S. N....	United States Navy
Sr.....	Senior	Ut.....	Utah
Sr.....	Strontium	V.....	Vanadium
.....	Saint	v.....	verb
.....	street	Va.....	Virginia
stat.....	statute	var.....	variant [word]
s.T.D.....	Doctor of Sacred Theology	var.....	variety of [species]
subj.....	subjunctive	Ven.....	Venerable
suf.....	suffix	Venet.....	Venetian
Su. Goth...	Suo-Gothic	vet....	veterinary
superl...	superlative	v. i. or	
Supp.....	Supplement	v. intr....	verb intransitive
Supt.....	Superintendent	vil.....	village
surg.....	surgery, surgical	viz.....	namely, to-wit [<i>vide- licet</i>]
Surv.....	surveying	v. n.....	verb neuter
Sw.....	Swedish	voc.....	vocative
Swab.....	Swabian	vol.....	volume
sym.....	symbol	vols.....	volunteers
syn.....	synonym, -y	Vt.....	Vermont
Syr.....	Syriac, Syrian	v. tr.....	verb transitive
t.....	town	W.....	Tungsten [<i>Wolfram</i>]
Ta.....	Tantalum	W.....	Welsh
Tart.....	Tartar	W. or w....	West, -ern, -ward
Te.....	Tellurium	Wal.....	Walachian
technol...	technology	Wall.....	Walloon
teleg.....	telegraphy	Wash.....	Washington
Tenn.....	Tennessee	Westph...	Westphalia, -n
term.....	termination	W. Ind. }	West Indies, West
terr.....	territory	or W. I... }	Indian
Teut.....	Teutonic	Wis.....	Wisconsin
Tex.....	Texas	wt.....	weight
Th.....	Thorium	W. Va.....	West Virginia
theat.....	theatrical	Wyo.....	Wyoming
theol.....	theology, theological	Y.....	Yttrium
therap....	therapeutics	yd.....	yard
Thess.....	Thessalonians	yr.....	year
Ti.....	Titanium	Zech.....	Zechariah
Tim.....	Timothy	Zeph.....	Zephaniah
Tit.....	Titus	Zn.....	Zinc
Tl.....	Thallium	zool.....	zoology, zoological
toxicol....	toxicology	Zr.....	Zirconium
tp.....	township		
tr. or trans.	transitive		
transl.....	translation, trans- lated		

See also ABBREVIATIONS: in Vol. I.

THE IMPERIAL CYCLOPEDIA AND DICTIONARY.

BRAVO, int. *brá'vō* [It., Sp. (see BRAVE)]: 'Excellent!' 'Well done!' Italian exclamation of praise; superlative form *Bravissimo!*—commonly used without distinction of number or gender; but the Italians say *bravo!* to a male singer or actor, *brava!* to a lady, and *bravi!* to a company of actors or singers: N. an assassin; a murderer for hire; the plural, *Bravi*, designated men in Italy, especially Venice, who could be procured to do any dangerous deed for money. The Italians also gave the name *Bravi* to those fanatics in the Turkish army, who after maddening themselves by opium, rushed upon the ranks of the enemy, and so met death. **BRAVISSIMO**, int. *brá-vīs'sī-mō* [It. ~~szzerl.~~]: excellently well done.

BRAVO DEL NORTÉ, *brá'vo dēl nor' lā*, or **RIO GRANDE**, *rī'o grānd*, or *rē'o grān'dē*: river emptying into the Gulf of Mexico, next in size to the Mississippi. It is politically important, being through its whole course the boundary between Texas and Mexico; while physically its mouth may be regarded as that point on the coast where Central America, in its geographical aspect, begins to taper toward the south. It rises in the Rocky Mountains, near lat. 38° n., long. 106° 30' w.; and after a course of 1,800 m. in a generally s.e. direction, it enters the sea near lat. 25° n., long. 97° w. The commercial value of the river is not great, for besides being for the most part very shallow, it is here and there beset by rapids and sand-bars. Small steamers, however, have gone up as far as Kingsbury's Rapids, about one-fourth of the entire length of the stream.

BRAVURA, n. *brā-vōrā* [Sp. courage, brag]: in music applied to a composition as well as a style of performance. As a composition, the B. is an air or song, with many difficult passages and divisions of notes, requiring great spirit and volubility of execution. The intention of merely astonishing by execution has brought this species of composition into undeserved discredit. The B. style came first from the Neapolitan school. Rossini, Bellini, etc., united the B. with the cantabile style; and instead of leaving the embellishments to the taste of the singer, wrote the whole of the notes in the music. The compositions of Mozart, Beethoven, etc., give abundant proofs of how they united true artistic merit with the B. style.

BRAW—BRAWN.

BRAW, a. *braw* [Scot.]: handsome; well dressed.
BRAWS, n. plu. *brawz*, articles of dress or personal ornaments. **BRAWLY**, ad. *braw'ly*, very well; perfectly.

BRAWL, n. *brawl* [F. *brailler*, to cry often: Dan. *bralle*, to talk much and high: W. *brawl*, a boast: comp. Gael. *braodhlach*, noise, discord]: a noisy quarrel; uproar: V. to quarrel noisily; to make an uproar; to sound as water flowing over a bed of shingle and gravel. **BRAWLING**, imp.: ADJ. noisy; quarrelsome; making the rough rattling sound of water flowing over a bed of shingle and gravel: N. the act of quarrelling; a disturbance. **BRAWLINGLY**, ad. *-ly*. **BRAWLED**, pp. *brawld*. **BRAWLER**, n. one who.—SYN. of 'brawl, v.': to wrangle; contend; squabble;—of 'brawl, n.': noise; quarrel; uproar; scurrility.

BRAWL, n. *brawl* [corruption of OF. *bransle*, a totter, a swing, a dance—from *bransler*, to totter]: in *OE.*, a sort of dance.

BRAWLING IN CHURCHES: in the law of England, an offense against the public peace. Mere quarrelsome words, which are neither an affray nor an offense in any other place, are penal in a church. The enactment now protects all kinds of religious services, though the jurisdiction of the Ecclesiastical Courts continues for some purposes. Constables and church-wardens may immediately apprehend and remove the offender. The law prohibits molesting or disquieting a clergyman during divine service. Also it is provided that if any person or persons shall disquiet or disturb any cathedral or parish church, chapel, or other congregation, or misuse any preacher or teacher, such person or persons may be committed to prison, and on conviction, be fined £20.

Reviling church ordinances subjects to fine and imprisonment—and profaning the Christian religion, and depraving the Book of Common Prayer, are also subjects of penal legislation. See **BLASPHEMY: RELIGION, OFFENSES AGAINST**.

BRAWN, n. *brawn* [It. *brano*, a piece of flesh violently pulled away from the whole: O.H.G. *brāto*; Fris. *braede*, a lump of flesh: OF. *braion* or *braon*, muscular parts of the body: Gael. *bráin*, big, bulky—*lit.*, a rough lump of flesh]: the flesh of a boar prepared in a particular manner; the muscular part of the body; the arm; a cooked gelatine mass made from the boiling down of the head and belly-piece of a pig, with ox feet sometimes added to render it gelatinous. The whole is rolled up tight in sheet-tin, and boiled for four or five hours. The moisture is then well pressed out of it, and having been allowed to stand 10–12 hours, the meat is put into cold salt and water, and is then fit for use. B. seems to have been a well-known dish as early as the latter part of the 15th c., for in Tyndale's version of the Book of Common Prayer, revised by Cranmer, and still in use, in Ps. cxix. 70, are the words: 'Their heart is as fat as *brawn*.' The B. of Wiltshire is celebrated, and it is also a famous dish in Canterbury. **BRAWN'Y**, a. *-y*, or **BRAWNED**, a. *brawnd*. muscular; fleshy; bulky. **BRAWN'Y**, n. a boar

killed and dressed for the table. **BRAWN'INESS**, n. the quality of being brawny; strength.

BRAXY, or **BRAKSIE**, n. *bräk'si*; also **BRAXES**, **BRAXIT**, **BRACKS**, **BRAIK** [Gael. *bragsaidh*, the braxy—from *braic*, the mouth]: a disease among sheep; the mutton of animals so affected, or that have died of sudden disease. The derivation of the word is uncertain. The vague way in which the term B. is used, renders it difficult to define the disease, for in different parts of the country, totally different disorders are included under this head. Of the two most generally recognized as B., the one is an intestinal affection attended with obstinate diarrhea, the other is a blood disease, and the result of plethora or fulness of blood. The second, spoken of by the best informed shepherds as the true B., may best be described here.

Causes.—A flock of very lean sheep placed on rich food is apt to be decimated by B. By rich food is meant particularly substances abundant in nitrogenous principles, such as luxuriant heather, strong and succulent grass, the best turnips, etc. Hilly land is favorable to the production of B., from the firm nature and nutrient qualities of food growing on it. The disease appears in such situations in winter. About the month of November, many of the well-fed young sheep placed on turnips die suddenly from B.; and, again, when farmers resort to the forcing-system toward spring, the mortality is great, particularly when, in addition to much artificial food, sheep are allowed rich pasture. The mortality is greatest at the period of full moon, from the sheep grazing during the light nights as well as by day. The shepherd very frequently at these times finds one or two dead in the morning. Some assert that, in the winter, exposure induces B.; and it is possible that it may be produced by any sudden check to the exhalations, which tend so much to maintain the balance of the functions and purify the blood.

Symptoms.—The animal, in full health, suddenly ceases to eat, has a staring look, is peculiarly excitable, and separates itself from the flock. The head is lifted high, the breathing becomes labored, the countenance appears anxious, and the animal loses the power of its limbs. It totters, falls over, is seized with convulsions, and dies within five or six hours, and often within an hour from the first symptoms of the disease.

Cadaveric appearances.—If the sheep's throat is cut before it dies, the absence of any peculiar appearances within the body is very remarkable: the flesh appears of a dark-red color, and the veins are charged with dark blood, but, on the whole, the body of the sheep looks so well that the mountain-shepherd cuts it up to make 'braxy mutton.' If the sheep is allowed to die of itself, the body soon swells, putreties, and is rendered useless.

Treatment.—The prevention of the disease alone affords hope, and it consists in regulating the animal's diet to prevent sudden transitions from low to rich keep; to mix food so as to modify the action of the more highly nitrogenized kinds; and to check the development of plethora

or fulness of blood by saline purgatives and diuretics, such as Epsom and Glauber salts or nitre. The principles of prevention are the same as in the case of BLACK QUARTER (q. v.) in cattle. Shelter during severe winter weather is insisted on by shepherds as essential to prevent the malady.

Braxy mutton, above alluded to, is, generally, not unwholesome; though in warm climates the same disease in sheep assumes a very malignant type, and indeed constitutes one of the carbuncular diseases. Though the flesh can be eaten with impunity in the mountains of Scotland, it is most dangerous and condemned in s. Europe.

BRAY, n. *brā* [OF. *braire*, to cry like an ass: Gr. *bracho*, I crash, I roar: Icel. *brak*, crash, noise: Dan. *brage*, to crash]: a loud harsh noise; the cry of an ass: V. to make a loud harsh noise like an ass. BRAY'ING, imp.: ADJ. making a loud harsh noise: N. a loud harsh noise as of an ass uttering its peculiar cry. BRAYED, pp. *brād*. BRAY'ER, n. one who; in *printing*, a wooden muller used on the ink-table to temper the ink.

BRAY, v. *brā* [Sp. *bregar*, to work up paste or dough: F. *broyer*, to bray—from OF. *breier*; Bret. *bræa*, to bray in a mortar: W. *breuan*, a mill: Gael. *brà* or *bradh*, a quern, a hand-mill]: to rub or grind down in a mortar; to pound; to grind small. BRAY'ING, imp. BRAYED, pp. *brād*.

BRAY, n. *brā*: in *OE.*, a cliff; a rising ground: see BRAE.

BRAY, *brā*: parish in the county of Berks, England, on the Thames river, 25 m. w. of London. B. comprises part of the town of Maidenhead, and is famous as the curacy of that 'vicar of Bray,' who was a Roman Catholic under Henry VIII., until that sovereign turned Protestant, when the vicar did the same; in Mary's reign he was again a Roman Catholic; and again Protestant under Elizabeth; declaring that his only religion was 'to live and die vicar of Bray.'

BRAY, *brā*: maritime town, Ireland, partly in the county of Dublin, partly in that of Wicklow, 13 m. s.e. from Dublin, with which it is connected by the Dublin Kingstown and Bray railway, and the Dublin Wicklow and Wexford railway. Some years since B. was a small fishing village; but the beauty of its situation has made it a popular watering-place, as well as a favorite location for villa residences. The most striking buildings are the new hotels, and a Turkish bath, recently diverted to other purposes. The affairs of the municipality are administered by town commissioners. B. has a weekly newspaper. Pop. (1861) 4,182; (1871) 6,087, of which 4,562 Rom. Cath. and 1,315 Prot. Epis.; (1881) 6,090; (1891) 6,077.

BRAY, Mrs. ANNA ELIZA: authoress: b. toward the end of the 18th c.; d. 1883, Jan.; daughter of John Kempe, of the New Kent Road, Surrey, Eng. At an early age, she showed much imaginative faculty, and a taste for design, which brought her the acquaintance of Mr. Stothard, R.A. From him she took lessons in drawing; and, 1818, Feb., married his second son, Charles Alfred Stothard, also an artist,

and author of a well-known work entitled *The Monumental Effigies of Great Britain, selected from our Cathedrals and Churches*, etc. In 1818, July, she accompanied her husband to France; and Mrs. Stothard wrote an account of her first foreign experiences, *Letters written during a Tour through Normandy, Brittany, and other parts of France, in 1818, with Numerous Engravings after Drawings by C. Stothard, F.S.A.* (Lond. 1820, 4to). Subsequently, Mrs. Stothard accompanied her husband on a similar tour in the Netherlands. In 1821, May, her husband died from the effects of a fall; and in 1823, she wrote *Memoirs, including Journals, Letters, Papers, and Antiquarian Tracts of the late C. A. Stothard, with Connective Notices of his Life, and some Account of a Journey in the Netherlands*. Distress of mind brought on ill health, and Mrs. Stothard suffered from an affection of the eyes, which compelled cessation of literary labor for more than two years. In 1825, she married the Rev. E. A. Bray, vicar of Tavistock; and in the following year, published a historical romance entitled *De Foix*. Her second romance, *The White Hoods*, was published 1828; followed by *The Protestant*, also 1828; *Fitz of Fitz-Ford, a Legend of Devon* (1830); *The Talba or Moor of Portugal* (1830); *Warleigh, or the Fatal Oak, a Legend of Devon* (1834); *Trelawny of Trelawne, or the Prophecy, a Legend of Cornwall* (1837); *Trials of the Heart* (1839); *Henry De Pomeroy* (1842); and *Courtenay of Walreddon, a Romance of the West* (1844). A collective edition of all these romances was published in 10 vols. 1845. Her letters to Southey were published, and reached a second edition 1879. Mrs. B. was author, also, of *The Borders of the Tamar and the Tavy* (1836); *The Mountrins and Lakes of Switzerland* (1841); *Trials of Domestic Life* (3 vols. 1848); *Life of Thomas Stothard, R.A.* (1851); *A Peep at the Pixies* (1854); and *Händel, his Life, Personal and Professional, with Thoughts on Sacred Music* (1857). In July 1857, Mrs. B.'s husband died; and in 1859, she published his *Poetical Remains*. In 1870, appeared *The Good St. Louis and his Times*, and *The Revolt of the Protestants of the Cevennes*. Her autobiography was edited by John A. Kempe 1884, in which year was published a revised edition, in 12 vols., of her novels and romances.

BRAY, THOMAS, D.D.: 1656–1730; b. Shropshire: English clergyman and writer. After receiving his education at Oxford, he was made rector of Sheldon; and upon the establishment of the Church of England in the colony of Maryland, he came to America to take direction of its affairs. He became much interested in foreign missions, and published, for their advancement, *Bibliotheca Parochialis* and a discourse on *Apostolical Charity*. Among his works were *Catechetical Lectures*; *Directorium Missionarium*; and *Martyrology; or Papal Usurpation*.

BRAYERA: see CUSO.

BRAYMEN, n. *brā'měn* [from Scotch *bray*, the same as Scotch *brae* (q.v.)]: Scotch name applied to the inhabitants of the southern declivity of the Grampian hills.

BRAZE—BRAZIER.

BRAZE, v. *brāz* [F. *braser*, to solder: AS. *brās*, brass, from being used in solder: Icel. *brasa*, to harden by fire, to solder iron—from *bras*, solder (see **BRASS** 1)]: to solder with brass; to harden to impudence. **BRA'ZING**, imp. **BRAZED**, pp. *brāzd*. **BRAZEN**, a. *brā'zēn*, made of brass; impudent, shameless: V. to meet with bold impudence; to be impudent. **BRAZENING**, imp. *brā'zēn-īng*. **BRAZENED**, pp. *brā'zēnd*. **BRA'ZENLY**, ad. *-lī*. **BRA'ZENNESS**, n. **BRA'ZEN-FACED** [see **BRASS** 2]: remarkably impudent. **BRA'ZEN-FACE**, n. a bold, impudent person. **BRAZIER**, n. *brā'zhēr*, a worker in brass; a pan for holding burning coals. **TO BRAZEN IT OUT**, to meet a conscious fault or crime in a bold, impudent manner. **BRAZEN AGE**, a degenerate age, characterized by selfishness, violence, and war; in *archeol.*, the period when brass began to be made use of. **BRAZEN DISH**, a standard measure by which other dishes are gauged, kept in certain mining districts under the charge of a proper officer. **BRAZEN SEA**, in Jewish antiquity, a huge vessel of brass or copper, oval shaped, with 12 oxen of like material for a pedestal. It stood in the priest's court of Solomon's temple, and was 10 cubits from brim to brim, 5 in height, and 30 in circumference. It held water for the ablutions of the priests before performing the service of the temple. *Note.*—**BRAZE** seems to be the softened spelling of **BRASS**, meaning primarily 'to harden by passing through the fire,' then 'to ornament with brass'; the entries **BRAZIER**, **BRASS**, and **BRAZE** have substantially the same etymologies; cross references are introduced to render the distinctive meanings plainer, and show their connection.

BRAZIER, n. *brā'zhēr* [F. *braise*, glowing embers—from Sp. *brasa*; Port. *braza*, live coals: old Ger. *bras*, fire (see **BRAZE**, and **BRAZIL-WOOD**)]: pan for holding burning coals; one who works in brass. Also spelled **BRASIER**.

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BRAZIL, *brá-zēl'*: republic in S. America; changed from the empire of B. 1889, Nov. 15; bounded n. by Colombia or New Granada, Venezuela, and the Guianas, British, French, and Dutch; e. by the Atlantic; s. by Uruguay and the Argentine Confederation; and w. by Paraguay, Bolivia, Peru, and Ecuador. It extends from 4° n. lat. to 33° 41' s. lat.; 3,219,000 sq. m., about 30,500 less than the United States. Its seaboard of about 4,000 m. projects into the Atlantic fully a thousand m. east of a direct line between its two n. and s. extremes.

Physically this country differs in many respects from most of the other political divisions of S. America. It knows nothing of the volcanoes and earthquakes of the Pacific coast; and with winds blowing constantly from the Atlantic coast, it is exempted from those droughts which are always blighting the slopes of the Andes. The river system, in the number and magnitude of its constituents, is unequalled. The n.w. portion is literally interlaced with streams. Most of them flow northward, and finally merge in the Amazon (q.v.). This river enters the country from the w., and after a n.e. course from this point, of about 1,800 m. falls into the Atlantic near the equator. It is the most voluminous, if not the longest river in the world. Next in size is the San Francisco, which, after flowing n. for 800 m. turns e., and then s.e., falling into the sea in about 11° s. lat. In order of size follow the Negro and Madeira, both tributaries of the Amazon—the former flowing from the n.w. and the latter from the s.w. The other large rivers of this portion of the country are the Branco, a tributary of the Negro; the Tapajos and Xingu, large affluents of the Amazon; the Araguay, Tocantins, Maranhão, and Paranaíba. Along the southern coast, s. from the San Francisco, are the mouths of the following considerable rivers: Vasabaris, Itapicuru, Paraguassu, Doce, Parahiba do Sul, and many others. In the interior of the s. portion of the country are the large rivers Uruguay and Paraguay.

The highest mountains of B. extend n. and s. like the Andes, although several inferior ranges traverse the country in other directions. In the e. portions are two great parallel chains, the Serra do Mar and the Serra de Villarica. The most picturesque mountain range is the Serra do Mar, following the coast s. w. of Rio de Janeiro, and finally stretching into two great arms which ultimately grasp the Montes Yerbales of the Argentine Republic. In the Serra do Mar there are peaks reaching to a height of 7,800 ft. above the sea-level, but the loftiest mountains are w. of that chain. Here are the Itatiaiossú, with the highest summit in Brazil, 10,300 ft. It is in the n w. portion of Rio de Janeiro.

Among the mineral productions are gold, silver, copper, iron, tin, chromate of lead, sulphide of zinc, bituminous coal, granite, limestone, porphyry, gypsum, diamonds, sapphires, emeralds, rubies, and topazes. Some of the diamonds are esteemed the finest stones known. The principal region where they are found is Minas, where the celebrated Serra do Frio mines are. The richest gold mines in the empire are in the vicinity of Ouro Preto, in the province of

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Minas Geraes. Silver is found in very many places, and is often mined with gold. Copper is mined in several provinces, and the industry is large. Coal is mined extensively in many places.

The climate in so large a country is necessarily much diversified. In the s. it is delightful, generally, the summers being cool and the winters mild. In the n. provinces heavy rains and violent storms are frequent, especially in the rainy season, from October to March. In the Amazon region the thermometer ranges from 68° to 98°. At Rio de Janeiro the average is 75°. The prevailing diseases are rheumatism, intermittent fever, consumption, and leprosy.

A large portion of B. is luxuriant with vegetation. Trees split for paling, in the neighborhood of Rio de Janeiro, often send forth shoots and branches immediately. In many portions of the Amazon valley the great trees destroy each other by their close crowding, and in the province of Moranhão the roots of plants stretch out with such firmness and such abundance from the shores of pools, that the pedestrian may be walking over the water supposing it to be solid ground. The vegetation of the coast is principally mangroves, whose seeds in this moist warmth begin to sprout before they drop to the ground. Farther back from the coast are graceful palms of many kinds. Farther inland still is an immense profuseness of vegetation, awkwardly grouped together, and grotesquely intertwined and crossed. Cocoa-trees, the vanilla, different kinds of pepper, cinnamon, and cassia abound. In the more remote interior, and on the vast pampas or southern prairies, solitary myrtles, numerous varieties of pleasing fruits, and now and then a cactus and ipecacuanha, add variety. The forests abound in useful and ornamental trees. The cocoa-tree thrives on the sea-shore, and supplies an important item of commerce. The Brazil-wood is a valuable timber, and yields a fine dye. Other trees are the rosewood-tree, the trumpet-tree, the laurel, the soap-tree, the palm, and the india-rubber tree. The last named is tapped every day during the season, and furnishes one of the most valuable exports of the country. Other important products of the soil are coffee, sugar, cotton, manioc, tobacco, rice, maize, and spices. Most important of these as an export is coffee, of which \$75,000,000 worth is shipped annually. Next in importance after coffee is sugar, with an annual export worth \$20,000,000.

Of animal life there is an unparalleled variety and abundance. The plains are covered with horses and horned cattle, many of them wild; and large flocks of goats and sheep and herds of swine, are pastured there. Pumas, jaguars, deer, several native animals of the wolf family, sloths, opossums, porcupines, armadillos, peccaries, capibaras, monkeys of different kinds, and vampire bats are in great abundance. Of serpents, there are anacondas and other pythons, rattlesnakes and jararacas, and many others. Turtles abound in the Amazon, and tortoises and

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terrapiu on the land. Of birds of prey, there are vultures, condors, eagles, hawks, and owls. Of birds of beautiful plumage there are an infinite variety, including many species of humming-birds, parrots, and cockatoos, and the brilliant toucan. Also, there are the oriole, the uraponga, and the rhea, a kind of ostrich. Of wading birds of fine plumage there are ducks, geese, pelicans, etc. The insects are beautiful, brilliant, and abundant. Butterflies are dazzling in color. Enormous spiders abound. The scorpions and centipedes are formidable, but the bees are stingless. The rivers abound in fish.

The population of B. comprises a number of distinct races, and many mixed and blended types. In the seaboard region the Indian or aboriginal element has largely become merged in the European; but the people of the interior nearly all are savages. It is thought that, through all their differences in different regions, a common original can be traced, called the Tupi-Guavani. The mingling of the Portuguese with the natives has given rise to the Mamlucos, who early became known by their raids in the s. provinces. Negroes were imported from Africa, and have mixed with whites and natives to such a degree that mulattoes of all shades now form a large proportion of the population. The creoles, who call themselves Brazil-erios, are nearly the equals of the Portuguese in mental and physical capacity.

B. was discovered 1499 by Vicente Yañez Pinzon (q.v.) in the service of Spain. Next year the Portuguese expedition to the East Indies, commanded by Pedro Alvarez Cabral (q.v.), missed its course through adverse currents, and came to this coast; and Cabral took possession of the country in the name of Emanuel, his sovereign. Successful colonization by the Portuguese soon followed, notwithstanding the opposition of Spain and the rivalry of private adventurers from France, who sought the country for purposes of commerce. Soon, however, the Spaniards of Buenos Ayres, feeling that the complete command of their mighty river was necessary to them, colonized the left bank by founding Monte Video. But nearly 20 years earlier, B. had acquired more territory on the Amazon than it was to abandon on the Plata, having, 1509, wrested from France, then at war with Portugal, what may now be designated Brazilian Guiana. It was only in 1531 that the Portuguese, busy as they were in India, planted their first settlement here. In 1578 B. fell, with Portugal itself, under the power of Spain—a connection which, besides being essentially detrimental, speedily threw it as a prey into the hands of the Dutch Republic; and though Portugal regained its own independence in 1640, it was not until 1654 that the country was entirely recovered from the Hollanders. Thenceforward the colony entered on a new era. Supplanted in a great measure throughout the east by the Dutch, Portugal was now directing most of its attention to her possessions on either side of the Atlantic. About a century and a half later, a still more beneficial change—arising from the mother country's own dis-

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asters—was inaugurated in the colony. In 1808 under the pressure of French invasion the monarchy, in the persons of the royal family, was virtually transferred from Portugal to B.—an event immediately followed by the opening of the ports to foreigners. As a remoter benefit, too, of an incident which had no parallel either in English or Spanish America, B. on shaking off, like its neighbors, the European yoke altogether, found a merely nominal revolution sufficient for its purpose; and since the transition period, 1821–25, this government, with subordinate institutions for local objects, secured to B.'s 20 vast provinces comparative unity and peace till 1889. In 1815 the Portuguese king, John VI., raised B. to the rank of a kingdom. Returning to Portugal, 1820, he left his son, Dom Pedro, regent. Two years later the latter declared B. free and independent, and assumed the title of Emperor. In 1831 Dom Pedro I. abdicated and returned to Europe, leaving his son Dom Pedro, then only six years old, his successor. The country was under a regency until 1841, when the son was declared of age and crowned Dom Pedro II. He occupied the throne till overthrown by the revolution 1889. Among the leading facts of his reign are a war with Paraguay, 1865; the opening of all important rivers to foreign commerce; the giving of subsidies to steamship companies; and the gradual abolition of slavery. The latter commenced 1871, Sep., by the passage of a law providing that after the date of the act all children of slave women should be considered free, yet bound to serve the owners of their mothers for the term of 21 years; and that all slaves belonging to the state or the emperor's household should likewise be free. The same law also provided for an emancipation fund to be applied to the ransom of slaves owned by private persons. In 1888 the remainder of the slaves, estimated at 500,000, were freed, but without compensation to owners.

The constitution of B., dated 1824, March 25, amended 1831, Aug., by the 'Acto Adicional,' established the legislative, the judicial, and the executive, as governmental powers—the last being vested in the emperor, who held in addition a 'moderating power' by his royal prerogative. The legislative power was vested for affairs of the empire in a general legislative assembly, and for provincial affairs in the provincial assemblies. The general legislative assembly consisted of two houses, the senate and the chamber of deputies, both elected by the people, but under different forms. Three candidates for each senatorship (for life) were chosen and nominated to the sovereign, who appointed one of the three. The senators, 60 in number, had to be 40 years of age, native born, and possessing an annual income not less than \$800. Their yearly salary was \$4,500. The 125 deputies were chosen for four years directly by the voters in districts; their annual income had to be not less than \$400; their salaries were \$3,000, with travelling expenses. Since 1881, Jan. 9, the election of senators and deputies was direct instead of indirect, and

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voters were required to have an annual income of about \$200. Minors, monks, and servants had no vote. All voters registered were required, under penalty, to vote. The annual sessions of the legislature began May 3, and continued four months, and at its opening and closing the two chambers sat together in general assembly for important business. Each house elected its own officers. The chamber of deputies had the initiative in the assessment of taxes, in matters concerning the army and navy, and in the choice of the sovereign should the latter act become necessary. The senate had cognizance of offenses by members of the imperial family, or by senators and deputies during the session, and might convoke the legislative assembly should the emperor fail to do so within two months after the period fixed by law. The sovereign held the executive power aided by his ministers and a state council. The ministers had the responsibility for checking treason, corruption, abuse of power, and all acts contrary to the constitution, or to the liberty, security, and prosperity of the citizen—a responsibility not to be evaded on the plea of orders from the sovereign. The executive functions—besides carrying into effect the measures passed by the legislature—consisted of the convocation of the ordinary meetings of the legislative assembly; the nomination of bishops, of governors of provinces, and of magistrates; the declaration of peace and war. The ‘moderating power,’ vested in the emperor—besides the selection of ministers and senators—extended to the calling of extraordinary legislative assemblies, a temporary veto on their action, the dissolving of the chamber of deputies, and the granting of amnesties and pardons. The ministry was in seven departments: war, foreign, interior, marine, finance, justice, and public works, agriculture and commerce. The ministers were assisted by a council of state, usually ex-ministers; it comprised 12 ordinary and 12 extraordinary members, all appointed in continuity by the emperor. The heir to the throne, when of age, was one of the council. Each province had its president, appointed by the central government, and its provincial legislature elected by the voters for two years. The provincial assemblies had jurisdiction on all local concerns.

The established religion of the empire was the Roman Catholic, but all others were tolerated ‘with their domestic or private forms of worship, in buildings destined for this purpose, but without the exterior forms of temples.’ No person could be persecuted for religious acts or motives. The Rom. Catholic clergy were maintained by the state. Funds, however, were voted also for the construction of chapels and for the subsistence of ministers of different religions. The bishops and all other ecclesiastical officers were, pending the confirmation of the Roman See, appointed by the emperor, and no ecclesiastical statute could be executed in the empire without the consent of the emperor or of the general assembly. Marriages of Protestants were respected as legal. B. is an ecclesiastical province with an archbishop, 11 bishops, 12 vicars-general, and 2 curates. Public education is divided into three classes: primary,

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preparatory, and superior. Higher education is controlled by the central government. Primary instruction in the capital is under the charge of the general government, and in the provinces under the provincial assemblies. Primary education, which is gratuitous has been made compulsory in several provinces, and will be extended as fast as possible. As yet it is backward. The school age is from 6 to 15 years. The number of illiterates is returned as 8,365,997 or 84 per cent. of the population. In 1887 B. had 8,651 schools, with 285,000 students; 20 secular colleges and lyceums; 9 religious seminaries; 11 theol. schools; 2 law schools; acad. of fine arts; conservatory of music; 3 milit. schools; art school; and a notable public library. It must not be inferred, however, that B. is without its men of distinction in literature and the fine arts. Probably the most remarkable writers of the Portuguese language on political economy and constitutional law were Coutinho, Bp. of Pernambuco, and Silva Lisboa, senator of the empire. Religious eloquence was formerly much cultivated, and Vieira was an original and eloquent preacher. Music and painting are also cultivated: for the former, the Brazilians have natural taste.

Such manufactures as exist in the country are prosperous. During the business year ending 1886, June 30, the Quissama Central Sugar Estate and House ground 40,791 tons of sugar-cane, and the company netted for the year a profit of \$80,014. The Rio Branco Central Sugar House forwarded 1886, Aug., by the Dom Pedro II. railway, the first consignment of 150 tons of white crystalline sugar of superior quality to Rio de Janeiro. The manufacture on a sugar estate of this sort of sugar, in which British Guiana has had such remarkable success, is a great step forward, inasmuch as it will eventually supersede the imported refined article. There were in operation in B. (1900) 155 cotton-spinners and weaving factories, with 10,000 power looms, and 288,066 spindles. Their joint capital was over \$45,000,000. The number of persons employed numbered more than 200,000. The manufacturing concerns nearly all use water-power.

The total receipts of the government have increased from \$25,740,120 in 1863 to \$153,412,120 in 1895; and during the same period the ordinary expenses have increased from \$29,930,355 to \$150,366,514. Large deficits, which were owing mainly to public improvements, the Paraguayan war, and the great famine of 1881, caused the government to issue loans both at home and in Europe. There are heavy duties both on imports and on exports. Direct taxes are laid on land, house-rent, trades and occupations, and transfer of property. The national debt, 1895, Apr., was \$431,200,474, or \$30 for every person in the country—more than twice as large as that of the United States *per capita*.

Trade and commerce have rapidly increased within the past decade, while the so-called trade balance for 1894-5 shows notable improvement. In 1895 there were 7,492 m. of railroad in operation for only 3,393 m. in 1884. The

BRAZIL.

3,890 m. of telegraph wire in 1877 had increased to 9,844 m. in 1893. The postal dept., which, 1875-6, carried 13,165,000 letters, carried, 1893, 33,441,000.

According to the first census the total pop. was stated at 4,396,000; (1850) 7,000,000; (1860) 8,000,000. The following table shows the area and population of the former provinces (now states) of Brazil according to the census of 1890, Dec. 31:

States.	Area, Eng. Sq. M.	Population, 1890.	Pop. per Sq. M., 1890.
Amazonas	732,250	147,915	.2
Pará	443,790	328,455	.7
Maranhão	177,520	430,854	2.4
Piauí	116,490	267,609	2.3
Ceará	40,240	805,687	20.0
Rio Grande do Norte	22,190	268,273	12.8
Parahyba	28,850	457,232	15.7
Pernambuco	49,560	1,030,224	20.7
Alagoas	22,580	511,440	22.1
Sergipe	15,090	310,926	20.6
Bahia	164,600	1,919,802	11.0
Espírito Santo	17,310	135,997	7.2
Rio de Janeiro	26,630	876,884	32.9
Federal District	540	522,651	960.5
Santa Catharina	28,620	283,769	9.9
Rio Grande do Sul	91,250	897,455	9.8
Minas Geraes	221,890	3,184,099	14.3
Matto Grosso	532,550	92,827	.2
Goyaz	288,470	227,572	.7
Paraná	85,430	249,491	2.8
San Paulo	112,280	1,384,753	12.3
Total	3,218,130	14,333,915	4.5

A census was taken in 1900, but the result showing a decrease in pop., the returns were not adopted.

By a sudden and comparatively bloodless revolution in Rio Janeiro, in which the army took the principal part, the monarchy was abolished and a republic proclaimed 1889, Nov. 15. A provisional govt. was formed consisting of Gen. Deodoro da Fonseca, pres. without portfolio; Aristide Loba, minister of the interior; Equintino Bocayura, minister of foreign affairs; Dr. Ruy Barboza, minister of finance; Campos Salles, minister of justice; Benjamin Constant, minister of war; Admiral Eduardo Vandenkolck, minister of marine; and Demitris Ribero, minister of agriculture. The imperial ministry were forced to resign; and while the provisional govt. guaranteed ample protection of life and property to the imperial family, it compelled all its members to leave the country on a man-of-war Nov. 17. On the 19th the following temporary constitution was promulgated. 1. That a republic is proclaimed; 2. That the provinces of Brazil, united by federation, compose the United States of Brazil; 3. That each state shall form its own local government; 4. That each state send a representative to congress, which will soon be convened, and the final decision of which the provisional government awaits.

BRAZIL.

pending which decision the governors of each state shall adopt means to maintain order and protect the rights of the citizens; 5. That in the mean time the nation's internal and external relations shall be represented by the provisional government. On the 21st a decree was issued establishing universal suffrage through the republic, and declaring that all Brazilians able to read and write were entitled to vote at elections for govt. officers. The govt. pledged itself to respect the Princess's matrimonial contract, and also the pensions conceded the poor by the deposed emperor; and agreed to give Dom Pedro an annual allowance in the civil list and a subsidy of \$2,500,000. The two last agreements were subsequently cancelled. 1890, Jan. 7, a further decree abolished the state religion. It declared that the federal and confederated state authorities were prohibited from establishing any religion; that the privilege to exercise a religious cult according to their faith was given alike to representatives of all religious beliefs; that this liberty protected individuals, churches, associations, and institutions in which any religious acts might be performed; that the patronage, resources, and prerogatives of all institutions were immediately extinguished; that the right of all churches and religious orders to acquire and administer estates under the laws was recognized; and that the federal govt. would continue to provide for the ecclesiastical revenue and support of the actual *personelle* of the Rom. Cath. Church, and would subsidize for one year existing professorships in the seminaries, leaving to each state in the future the right to recognize the ministers of this and other religions without contravening the preceding provisions. It was also decreed that a general election for a constitutional assembly of one house only be held through the republic 1890, Sep. 15; that the assembly meet in the capital city Nov. 15 following; and that Nov. 15, the anniversary of the birth of the republic, should be observed in the future as a national holiday. The formal recognition of the new republic by the United States occurred 1890, Jan. 29, when Pres. Harrison received the credentials of H. G. Ameral Valente as minister resident, and of Salvador Mendonca as envoy extraordinary on a special mission to the United States. (See PEDRO II. DE ALCANTARA.)

In 1896 the estimated revenues of B. were \$164,282,664; expenditures \$161,631,288; imports (1890) \$141,960,000; exports \$173,600,000; trade with the United States in 1887, imports \$8,071,653, exports \$52,953,176. The internal provincial trade 1885-90 averaged \$65,000,000 per annum. 1890, Jan. 1, the new minister of finance reported the foreign funded debt at \$146,013,600, domestic funded \$293,535,962, domestic floating (including paper money in circulation, \$96,860,430) \$139,380,093; total, as far as could be ascertained, \$578,929,655. The army numbers about 18,164 officers and men in time of peace, and the ordinary war strength is about 32,000. Milit. schools are maintained at Rio Janeiro and Porto Delegua, and a naval school at Rio Janeiro. The navy contains 52 vessels in service;

BRAZIL—BRAZILIAN GRASS.

comprises 9 iron-clads, 5 cruisers, 16 gunboats, 2 steam-transports, 5 school-ships, 13 torpedo boats, and 2 steam tugs, mounting 254 guns; and has a force of 5,788 officers and men, including marines.

BRAZIL, ISLAND OF: one of the many mythical islands which early cosmographers reported as existing in the Atlantic. In Mercator's Atlas, 16th c., the north Atlantic where there are really only a few islands, was represented as studded with them. After the discovery of America, geographers continued for some time in the belief that it was a part of Asia; and hence may have set down some pretended or improperly-reported discoveries as islands. Besides, imagination and fancy had free play in that credulous age. B., which was named from the red wood of that name, was assigned to different places; on one map it was placed among the Azores, and at last obtained the name of Terceira.

BRAZIL CABBAGE, or CHOU CARAÏBE (*Caladium sagittifolium*, or *Xanthosoma sagittifolia*): plant of the nat. ord. *Araceæ*, nearly allied to Cocco (q.v.), and very similar to it, although it differs in having arrow-shaped, pointed leaves. It is supposed to be originally a native of tropical America, but is now in common cultivation throughout the tropics, not only the root being used for food like that of cocco, but also the leaves, boiled as greens. Both root and leaves are almost entirely destitute of the acridity generally characteristic of the order.

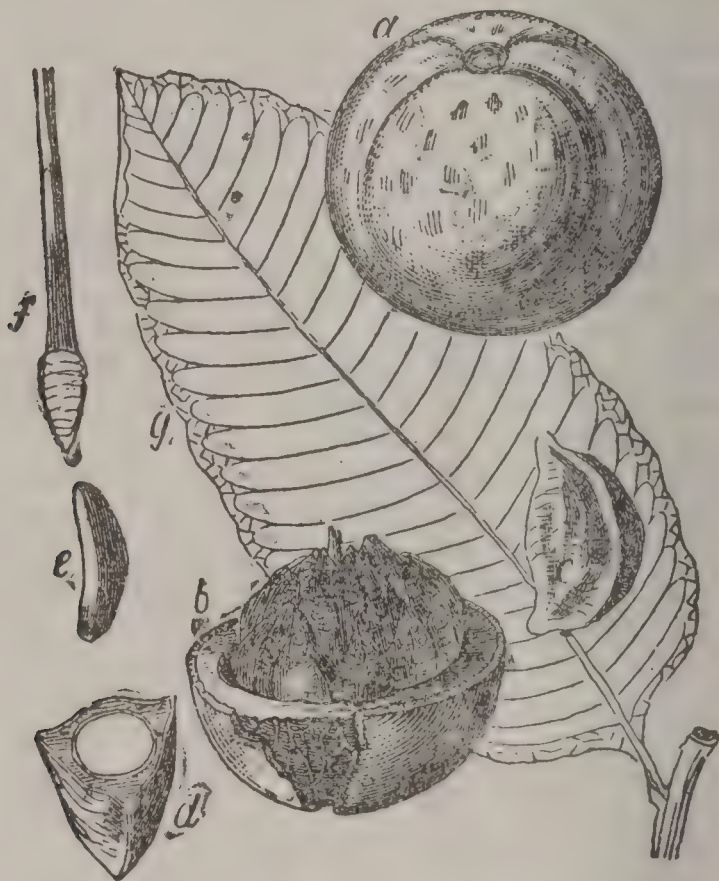
BRAZILIAN GRASS: incorrect popular name of a substance used in the manufacture of a very cheap kind of hats, known as B. G. hats, and also as *chip* hats. It consists of stripes of the leaves of a palm, *Chamærops argentea*, imported for this manufacture, chiefly from Cuba. See **CHAMÆROPS**.

BRAZILIAN PLUM—BRAZIL NUTS.

BRAZILIAN PLUM: see HOG PLUM.

BRAZILIN, n. *brăz'il-în*: substance found in Brazil-wood and Sapan-wood; it is colored red by any fixed alkali.

BRAZIL' NUTS: seeds of the *Bertholletia excelsa*, a majestic and beautiful tree of the nat. ord. *Lecythidaceæ* (q.v.). The tree grows to the height of 100 or 120 ft., and abounds on the banks of the Orinoco and in the n. of Brazil. It produces a round woody pericarp or seed-vessel, almost as large as a man's head, within which are many of the seeds or nuts. The pericarp is very heavy and solid, requiring a blow of a sledge-hammer to break it; and at the time when this great



Brazil Nut:

a, the fruit; **b**, the same, with half of the pericarp removed to show the nuts or seeds; **c**, a single seed or nut; **d**, a nut cut across; **e**, a kernel of a nut; **f**, the central placenta to the lower end of which the nuts are attached in the pericarp; **g**, a leaf.

fruit is ready to fall, it is dangerous to walk under the tree. The seeds, popularly called nuts, which they much resemble, are wrinkled and triangular, with a hard shell and a pure white kernel, which, when fresh, is very agreeable. They are exported chiefly from Para and French Guiana. They yield a large quantity of oil, which is good for burning. The nuts or seeds of the *Lecythis ollaris*, or POT TREE, are produced in a pericarp which resembles a rusty iron pot with a lid, the lid dropping off and letting the seeds out, which are oblong, grooved, and esteemed much superior to the common B. N.; but they have not yet become an article of commerce, as the tree grows chiefly in the

BRAZIL WOOD.

interior of the country, whence the nuts are only occasionally sent to the coast.

BRAZIL-WOOD, n. *bră-zîl'*- [Port. *brasa*, glowing embers: OE. *brasil*, of a bright red: Sw. *brasa*, to blaze]: a name applied to various red-woods of commerce from Brazil, forming species of *Cesalpinia*, ord. *Leguminosæ*, sub.-ord. *Cesalpinieæ*; a heavy wood of a red color, used in dyeing red; the *Cesalpinia brasiliensis* produces a dye-wood, and timber for cabinet-work; *C. echinātā*, a species producing a dye-wood, and known as pernambuco-wood; logwood, which see. **BRAZILIAN**, a. *bră-zîl'yan*, of or from Brazil. **BRAZILETTO**, n. *bră-zîl-lî-tô*, an inferior kind of brazil-wood; a general name of *Cesalpinia*. **BRAZILEIN**, n. *bră-zîl-ē'in*, the coloring matter of brazil-wood. **BRAZIL-NUTS**, triangular-shaped nuts from Brazil having hard wrinkled shells, and pure-white kernels, forming the seeds of a large tree, the *Bertholletia excelsa*, or *nobilis*.

BRAZIL' WOOD: dark-red or yellowish-brown dye-wood, which forms a considerable article of export from



Brazil Wood:

a, a branch with leaves and flowers; *b*, a pod.

Brazil, where some of the trees which yield it are very abundant. It is the produce of different species of *Cesalpinia* (q.v.). The best kinds are those called Pernambuco Wood, All Saints' Wood, and St. Martha Wood. Much of

BRAZING.

the B. W. of commerce is obtained from *Cesalpinia Brasilensis*, a tree which is a native of the West Indies, commonly growing in dry places and among rocks, and seldom exceeding 30 ft. in height. It has bipinnate leaves, with many smooth, obtuse, oblong leaflets, and no terminal leaflets, the flowers in pannicles, with downy stalks. The heart-wood alone is of any value.—PERNAMBUCO WOOD is the produce of *Cesalpinia echinata*, a prickly tree, with prickly pods, and of which the red and yellow flowers have a delicious smell resembling that of the lily of the valley. The sap-wood is extremely thick, and the valuable heart-wood bears a small proportion to the whole diameter of the stem.—The Sappan Wood (q.v.) of the East Indies nearly approaches B. W. in quality. It is the produce of *Cesalpinia Sappan*, a small, thorny tree.—The BRAZILETTO WOOD, sometimes also called B. W., brought from the Antilles, is much inferior. *Cesalpinia crista* probably yields some of the inferior West Indian Brazil Wood.—It is to be noted that B. W. does not take its name from Brazil, but is mentioned under the name *Braxilis* in documents much older than the discovery of America, the Sappan Wood of the East Indies being probably intended; and the name of the country, Brazil, is derived from this wood.

When freshly cut, the color of B. W. is yellow; but when exposed to air, moisture, and light, it becomes red, and is generally sent into market ground down to the size of ordinary saw-dust. When treated with water, alcohol, or ether, the weathered B. W. readily yields up its red coloring matter, called *Brazélin*. The latter is supposed to be produced from the oxidation of a colorless substance called *Brazilin*, which exists in the original yellow wood of the tree. Strong decoctions of B. W. are used by the dyer and calico-printer in the fabrication of reds, browns, etc.; it is used also in the manufacture of red ink. See INK.

BRAZING, or BRASS SOLDERING: process of uniting together two pieces of brass, two pieces of copper, or one of each, by means of a hard solder, partaking more or less of the composition and properties of ordinary *brass*. The edges or parts of metal to be joined are first filed bright, so as to be thoroughly clean, then there is strewed over the gap or crevice a mixture of the solder and borax. The solder employed varies in composition according to the kind of work, and may be rendered more fusible by the addition of a larger amount of zinc, but the general proportions are (1) 16 copper, 16 zinc, and 1 tin; (2) 12 brass, 4 zinc, and 3 tin; or (3) 18 brass, 3 zinc, and 2 tin. When the whole has been fused together, it is allowed to cool, and is then filed down to a coarse powder, in which state it is used. The borax is employed to form a glaze over the brightened surfaces, and thus prevent the oxidation of the metal, which would seriously interfere with B., and even stop the operation. An outward coating or layer of charcoal is likewise serviceable in the exclusion of the air during the B. of large pieces of metal. Where a very high heat is required in the process, a little powdered glass is mixed with the borax. The mixture of solder and borax

BRAZOS DE DIOS—BRAZZA.

may be applied dry, but it is better to moisten it with water, and to lay it on the filed surfaces with a spoon. The whole is then gently heated, when the water evaporates and leaves a crust of borax and solder. The work may now be strongly heated before the blow-pipe, or over a clear fire, and at a bright-red heat the solder fuses and the zinc begins to burn with a pale-blue flame. At this stage, the solder *flushes* or becomes liquid enough to permeate the joint or crevice; but should it be tardy in acting thus, several slight taps will insure the proper result. The whole is now cooled, and toward the close, the articles may be introduced into cold water for rapid reduction in temperature. See SOLDER.

BRAZOS DE DIOS, *brá'zōs déh dé'ōs*: river of Texas, the second, if not the first, in magnitude that flows within the state. It runs toward the s.e., rising in the table-land of Bexar co. and falling into the Gulf of Mexico about 40 m. s.w. of Galveston. With a course of about 900 m., it is navigable at all times 40 m. from its mouth, and at seasons 300 miles.

BRAZZA, *brát'sá*: island in the Adriatic, belonging to Dalmatia, Austria; lat. 43°-44° n., long. 16°-17° e.; 170 sq. m. It is separated from the mainland by a channel of 8 or 10 m. in breadth. Its surface is mountainous, and extensively wooded; vines, yielding excellent wine, are grown in the valleys, and figs, saffron, almonds, and oil are produced in considerable quantities. Excellent building stone is found in the e. part. St. Pietro di Brazza is the chief town. Pop. (1880) 19,969; (1891) 15,497.

BRAZZA, *brát'sá*, SAVORGNAN DE: explorer: b. Rome, Italy, 1842, Jan. 6. He was bred to the sea; entered the French Naval School 1875; became a naturalized Frenchman 1878; and becoming acquainted with the Marquis de Compiègne and his work of exploration in the Ogôoué region was commissioned by the minister of public instruction to continue the marquis's work. At the moment Stanley had finished his passage across Africa by following the course of the Congo river, B. with Dr. Ballay, a naval surgeon, and Alfred Marche, the naturalist, began ascending the Ogôoué. In 1878, Aug., he reached the village of Okanga, and made a treaty with the natives. He spent a part of 1879 in France, and toward the close of that year established a French station on the Congo. While Stanley was opening a road along the Congo in the interest of the Belgian scheme, B. discovered a nearer road to the Congo and one that avoided its cataracts, by striking inland from the French settlement of Gaboon till he reached the Alima river, a tributary of the Congo, only 70 m. from the coast. He built his road, sailed on the Alima to the Congo, took possession of the region in the name of France, and opened trading stations before Stanley had completed his road to the Congo. 1890, Apr. 14, Stanley charged B. with having received King Leopold's money and handing the results of his labors with it to France, though the French govt. had appropriated large sums for B.'s work.

BREACH.

BREACH, n. *brēch* [AS. *brice*; F. *brèche*, a breach or opening in a wall—from O. H. G. *brecha*, a break (see **BREAK**)]: a gap or opening, as made by cannon or gunpowder; the act of breaking, or state of being broken; the breaking of a law, or the non-fulfilment of an agreement; a neglect of duty; a difference or quarrel: V. to make an opening or gap in anything; to make a breach. **BREACH'ING**, imp.: ADJ. used for making breaches or openings, as cannon. **BREACHED**, pp. *brēcht*. **BREACH'LESS**, a. **BREACH OF PRIVILEGE**, anything in word or deed derogatory to the dignity of either house of parliament, of which each house is sole judge, and can punish or acquit at pleasure—or to the dignity of any legally organized body. **BREACH OF PROMISE**, a suit instituted in a court for damages by the injured individual, man or woman, for failure to perform a contract or promise of marriage. **BREACH OF THE PEACE**, an offense or disturbance against public order and decency. **BREACH OF TRUST**, a violation or betrayal of confidence by the misappropriation of funds, documents, or property held on behalf of others. **BREACHING BATTERY**, in *mil.*, two or more cannon protected by an earthen parapet, employed to break down or make openings in walls, etc., of fortified places.—**SYN.** of 'breach, n.': break; gap; chasm; rent; cleft; rift; fracture; break; aperture; infringement; infraction; contention; dispute; quarrel; difference; misunderstanding; separation; violation.

BREACH, in Law: a breaking or violation of a right or of an obligation or engagement legally binding; and in this sense it has numerous applications, of which the following are those more particularly treated in law-books:

BREACH OF ARRESTMENT, or of Attachment: see **ARRESTMENT**: **ATTACHMENT**: **GARNISHEE**.

BREACH OF CLOSE is a trespass by which an unwarrantable entry is made on another man's land, for satisfaction of which injury an action will lie to recover damages. It is called a trespass for breaking a man's *close*, because every man's land is, in the eye of the law, inclosed and set apart from his neighbor's; and that either by a visible and material fence, as one field is divided from another by a hedge; or by an invisible boundary, existing in the contemplation of the law, as when one man's land adjoins to another's in the same field. The liability to this injury attaches not only to the party himself trespassing, but also to trespass by his cattle. And the law gives the party injured a double remedy in this case, by permitting him to distrain the cattle till the owner shall make satisfaction, or else by leaving him to the ordinary remedy by action for the damage done.

But in some cases this trespass is justifiable; as where it is done in exercise of a right of way, a right of common, or the like; or upon land adjoining a public road when the road is impassable, doing as little damage as possible in the passing through; or where a man comes to demand or pay money payable on the particular land; or to execute, in a legal manner, the process of the law; or by the license of the plaintiff himself; or for immediate abatement and

BREACH.

removal of a nuisance on adjoining lands after due notice to the owner has been disregarded. Also, a man may justify entering into an inn or public house without the leave of the owner first specially asked; because when a man professes the keeping of such an inn or public house, he thereby gives a general license to any person to enter his doors. So a landlord may justify entering to distrain for rent; and a reversioner to see if any waste be committed on the estate, for the apparent necessity of the thing; and it has been held that the common law warrants the hunting of ravenous beasts of prey, as badgers and foxes, in another man's land, if no greater damage be done than is necessary, because the destroying such creatures is said to be profitable to the public. But in cases where a man misdemeans himself, or makes an ill use of the authority with which the law intrusts him, he is accounted a trespasser *ab initio*; as if one comes into a tavern, and will not go out in a reasonable time, but remains there all night, contrary to the inclinations of the owner; such wrongful act is held to affect and have relation back even to his first entry, and make the whole a trespass. But a bare nonfeasance, as not paying for the wine that he calls for, will not make him a trespasser, for this is only a B. of contract. See Blackstone and Stephen's *Com.* respecting 'civil injuries.' See CLOSE: BREAKING INCLOSURE: TRESPASS.

BREACH OF COVENANT is one of those civil injuries by which is meant a violation of a covenant or agreement contained in a deed of conveyance, either to do or omit to do something, and which B. gives a right of action against the party who made the covenant and his representatives. See COVENANT.

BREACH OF CONTRACT is a general description of injury, by which is understood the violation of any contract or legal engagement, and for which, at law, damages may be recovered, according to the nature of the breach and character of the contract. See CONTRACT: DAMAGES: SPECIFIC PERFORMANCE: EQUITY, COURTS OF: CHANCERY, COURT OF.

BREACH OF DUTY may be legally defined as either the non-execution of an office, or the performance of it in such a way that the conditions on which it was undertaken are violated. Such misconduct may either violate the conditions of an express contract, or it may be equally opposed and do equal violence to any implied engagement, not from the express determination of any court or the positive directions of any statute, but from natural reason and the just construction of law, which assumes and intends that every man has engaged what his duty or justice requires at his hands. And he must do this with integrity, diligence, and skill; for if, by his neglect, injury accrues to individuals, they have their remedy against him in damages. See CONTRACT: DUTY: OBLIGATION: DAMAGES: EQUITY: PERFORMANCE OF CONTRACTS.

BREACH OF THE PEACE is an offense against the public tranquillity and safety, and is either felonious or not fel-

BREACH.

onious; practically any conduct that can be called 'disorderly.' See PEACE, OFFENSES AGAINST THE PUBLIC.

BREACH OF POUND is an indictable offense—the breaking any *Pound* (q. v.), or place where cattle or goods distrained are deposited, in order to rescue them. When once impounded, such goods or cattle are understood to be in the custody of the law, and an action for treble damages will lie for illegally taking them out of pound upon a distress for rent. See Stephen's *Com.*, vol. iii. See DISTRAIN: DISTRESS: POUND.

BREACH OF PROMISE TO MARRY: see PROMISE and MARRIAGE.

BREACH OF TRUST: see TRUST.

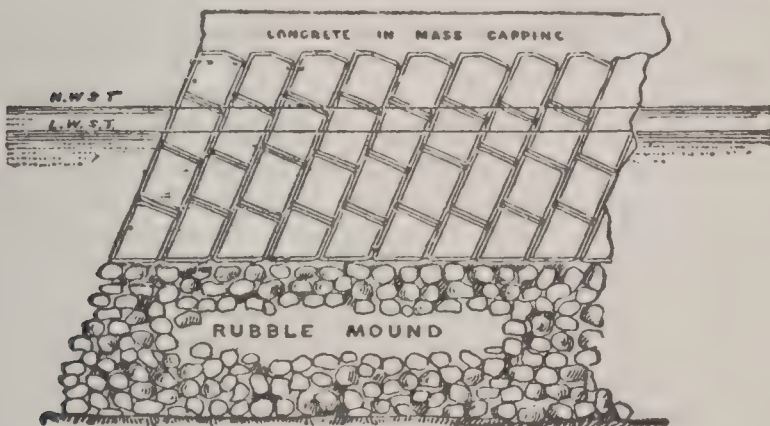
BREACH, in Siege-works: a gap in any of the defensive walls or gates of a city; and *breaching* is the operation by which the gap is produced, usually by the guns of the besiegers. *Breaching batteries* are employed, consisting of several pieces of ordnance, so chosen as to kind and size, and so placed as to distance, as to burst a hole through the defenses in the shortest practicable time. The greatest effect is produced by lodging the balls in two vertical lines, from the parapet of the wall downward, and in a horizontal line, connecting the lower ends of those vertical lines; and then overturning the mass of material thus loosened by an irresistible volley. When a hole has once been made, by thus knocking away the masonry or earthwork, the breaching is continued until the crumbling mass has so accumulated as to form a practicable slope, up which the storming party of the besiegers may run. See ASSAULT. During the Peninsular war there were some formidable examples of breaching. At Badajoz, 14,000 shot brought down 180 ft. of wall in 104 hours, from a distance of 450 yards. At Ciudad Rodrigo, 6,700 balls brought down 105 ft. of wall in 32 hours, from a distance of 560 yards. At St. Sebastian, 13,000 shot brought down 100 ft. of wall in 62 days, from a distance of 620 yards. It was calculated, from these and other instances, that 10,000 24-lb. shot, or 240,000 lb. of iron, will breach 100 ft. of wall from a distance of 500 yards—the wall being of fair average masonry, and the height and thickness a fair average of those used in fortified towns. It must be remembered, however, that this estimate was made before the days of rifled cannon and Armstrong guns; and, on the other hand, that the walls adverted to were not of granite.



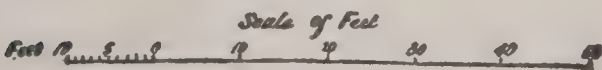
Bread-fruit (*Artocarpus incisa*).



Bread-fruit (*Artocarpus incisa*). Another specimen.



COLOMBO



Section of Colombo Breakwater.

BREAD.

BREAD, n. *brēð* [Icel. *braud*; Ger. *brod*; AS. *breod*, bread; Gael. *brod*, the choice or best of a thing]: food in general; loaves; cakes or biscuits prepared from flour of any kind of grain; sustenance. **BREAD'LESS**, a. without bread. **BREAD'-CHIPPER**, one who chips bread; a baker's servant; an under-butler. **BREAD-CORN**, the different kinds of grain of which bread is made. **BREAD'-FRUIT**, the fruit of a tree whose pulp resembles bread when baked; the fruit of the tree *Artōcārpus incīsa*, ord. *Morūcēæ*, native of Pacific islands. **BREAD'-STUFF**, corn, meal, or flour for bread. **BREAD AND BUTTER**, one's means of living, or worldly position. **EAT OF ONE'S BREAD**, to enjoy one's hospitality; to receive one's means of living from. **BREAD'-WINNER**, the member of a family who earns their means of subsistence.

BREAD: loaves, cakes, or biscuits prepared from flour or any grain. The earliest and most primitive way of making B. was to soak the grain in water, subject it to pressure, and then dry it by natural or artificial heat. An improvement upon this, was to pound or *bray* the grain in a mortar, or between two flat stones, before moistening and heating, and from this *braying* operation some etymologists suppose the word *bread* derived (as if *brayed*). A rather more elaborate bruising or grinding of the grain leads to such simple forms of bread as the *oat-cakes* of Scotland, prepared by moistening oatmeal (coarsely bruised oats) with water containing some common salt, kneading with the hands upon a baking-board, rolling the mass into a thin sheet, and ultimately heating before a good fire, or on an iron plate, called a girdle, suspended above the fire. In a similar manner, the barley-meal and pease-meal *bannocks* of Scotland are prepared, and in the East Indies (especially the Punjab and Afghanistan), as well as in Scotland, flour is kneaded with water, and rolled into thin sheets, as *scones*. The *passover cakes* of the Israelites also were prepared in this way. A similar preparation of wheat-flour, but where the sheet of dough is made much thicker, forms the *dampers* of Australia. The Indian corn-meal, kneaded with water and heated, affords the *corn-bread* of America. The kinds of B. referred to above are designated *unleavened*, as no leaven has been added to the dough to excite fermentation. Even in the time of Moses, however, *leaven* was employed in making bread. It is probable that the Egyptians were the first to use leaven; that the secret afterward became known to the Greeks; and that the Greeks communicated the process to the Romans, who spread the invention far and wide in the northern countries during their campaigns.

The grain of wheat is generally employed in the manufacture of the better kinds of B. by the more advanced nations; though rye, barley, Indian corn, and rice also are extensively used. The average composition of the grain of wheat when dried, so as to evaporate about 14 per cent. of moisture, is

Gluten and albumen.....	13½
Starch.....	54½
Gum, sugar, oil, and fibre.....	30
Saline matter.....	2

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The proportion of these ingredients varies, however; and though the native country of wheat is unknown, yet in a large portion of the world, within the wheat zone (see **WHEAT**), the quality improves with southward travel. Thus, Scotch wheat is inferior to English, the latter to French, that to the Italian; and some of the finest wheat in the world is grown in Barbary and Egypt. However, wheat of unsurpassed quality is produced in the n.w. states of the Union. The principal constituents of wheat may be separated from each other without much difficulty. Thus, if wheat-flour be placed in a cloth bag with the mouth well closed, and the whole introduced into a basin of water, and pressed by the fingers for some time, the starch is squeezed through the cloth as a fine white powder, and the gluten is left in the cloth as a viscid or sticky substance. Again, if wheat-flour be burned on a porcelain plate on a fire, or oven, or gas-lamp, till it can burn no longer, it leaves behind a small amount of ash or saline matter.

Previous to being employed in the fabrication of B., the grain of wheat undergoes the process of *grinding*, with the double object of reducing it to a fine state of division, and separating the more hard and indigestible parts. See **MILL**. During the grinding operations, the wheat, as it passes from grain to flour, nearly doubles its bulk. The products come from the dressing-machine divided into different qualities, a quarter of wheat yielding—

	Bushels.	Pecks.
Fine flour...	5	3
Second flour.....	0	2
Fine middlings.....	0	1
Coarse middlings.....	0	0½
Bran	3	0
Twentypenny.....	3	0
Pollard.....	2	0
	—	—
	14	2½

In the making of B., the finest flour is employed in making *firsts*; a coarser flour is made into *seconds*; and a still coarser into *thirds* or coarse bread. There is no bran in *firsts*, but a greater or less proportion of the finer bran in *seconds* and *thirds*. In the making of good B. three things are absolutely requisite: flour or meal, yeast or leaven, and water containing salt. The yeast (q. v.), or leaven (q. v.), is added to give a start to the fermentation (q. v) process, thereby supplying carbonic acid, which communicates a spongy or light texture to the bread. Leaven is the more primitive ferment, and is simply a portion of moistened flour or dough in which the fermentative agencies have begun to work. It may be procured by allowing moistened flour to lie in a warm apartment (summer heat) for six or eight days, and when sufficiently formed, has an acid taste and reaction, and a somewhat fusty odor. When brought in contact with a new portion of flour and water, and incorporated therewith by kneading, it very quickly acts as a ferment, and develops partial fermentation in the whole. Hence it is that where leaven is used, it is customary to retain a portion of the leavened dough for the next baking.

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On the continent of Europe leaven is still extensively employed, especially in districts far from breweries. In Britain and America, yeast is generally used as the ferment.

The materials being at hand, and the proper benches, utensils, and oven within reach, the baker takes a quantity of water and adds to it the yeast and salt; after which the flour is added, and the whole thoroughly and laboriously kneaded together till it assumes a ropy consistence. It is then called the *sponge*, and is placed in a kneading-trough in a warm place, which is styled *setting the sponge*. In a short time, the yeast begins to act on the gluten, starch, and sugar of the flour, compelling the latter to pass into alcohol and carbonic acid gas in every part of the dough, which thereby becomes inflated with innumerable air cavities. When the fermentation has sufficiently advanced, the baker takes the sponge, adds more flour, water, and salt, and a second time subjects the whole to a thorough process of kneading, to prevent portions being so far fermented as to become *sad*, and again allows the mass to lie in a warm place for a few hours. The dough swells considerably from distension by gas, and is weighed out into lumps of the proper size, which are shaped into loaves, constituting the *batch*, or placed in tin pans, and are allowed to lie for a short time till they become further distended. The oven has previously been heated by flues, by heated air or steam, or by wood being burned within it, to a temperature of at least 320° F., which is the lowest temperature at which B. can be baked, and ranging up to 572° F.; and when it has been thoroughly cleaned out, the loaves are introduced and placed on the floor, and the oven shut up. The heat acts in dissipating much of the water from the dough, in distending the air cavities more fully, and in partially *boiling* the starch and gluten of the dough, and developing some gum from the starch. Indeed, though the temperature of the oven is much higher, yet the loaves beyond the mere crust are bathed in an atmosphere of steam, and are never heated above 212°, as has been proved by direct experiments with the thermometer. One effect of the heat is to arrest any further fermentation (q.v.; see also YEAST). After several hours' baking in the oven, the length of time being determined by the temperature, the loaves are withdrawn, and allowed to cool. The brown appearance of the crust of loaves, and the pleasant taste of the crusts, are due to the action of the heat on the starch and the formation of dextrine (q.v.), a sort of gum. The number of quartern (4 lb.) loaves which a sack of flour weighing 280 lbs. yields, is 90. It is apparent, therefore, that as 280 lbs. of flour yield 360 lbs. of B., that a good deal more water must be present in the latter than in the former; and, indeed, ordinary good wheaten B. contains about 45 per cent. of water. This water is retained even after the loaf is apparently dry, and even mealy, as the gum and gluten have a great affinity for water.

Improvements in the process of making B. are occasionally effected. Thus a form of yeast, called German barm or yeast (q.v.), has been introduced, which is more cleanly

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than ordinary yeast or leaven, but appears to be too rapid in its power of causing fermentation to be manipulated easily in the making of ordinary loaves, though it does well for pan-loaves and fancy B. in general. Instead of raising the dough by the action of yeast, which decomposes a part of the flour and causes the loss of about 2 per cent., bicarbonate of soda and hydrochloric acid are sometimes employed. The proportions by this process are 4 lbs. of flour intimately mixed with 320 grains of bicarbonate of soda; to this is added a mixture of 300 grains of common salt in 35 ounces of water and $6\frac{1}{2}$ fluid drachms of hydrochloric acid, sp. gr. 1.16, and the whole is kneaded and placed in the oven. When the mixture is made, the acid acts on the bicarbonate of soda forming common salt, which is left in the dough, and carbonic acid is liberated at every point, and communicates a spongy texture to the dough. A disadvantage attendant on this mode of raising the dough is, that it is apt to leave too much common salt in the B. This is obviated by using water charged with carbonic acid: see **AERATED BREAD**. Sesquicarbonate of ammonia is employed to some extent in the preparation of rusks, ginger B., and other light fancy B.; when heated, it entirely passes into gas, and thus yields a very spongy mass. *Short-bread* is prepared from flour which has been incorporated with butter. See **UNFERMENTED BREAD**.

The appearance which good wheaten B. ought to present, is that of a vesicular or spongy mass, from which layers can be readily detached; and this, known to bakers as *piled B*, is the best index of good, wholesome and easily-digested bread. When the layers cannot be detached, and the loaf cannot be crumbled down by the fingers into a coarse powder, or the fragments be thoroughly soaked and be readily diffused through water, but become a permanent tough mass of dough, the B. is imperfectly made.

Rye B. is very extensively used in n. European countries, where the soil being sandy is admirably adapted for the growth of rye. It yields a flour darker than wheat-flour. It is almost equal in nutritive value to wheaten-bread. Barley and oats, the B. from which is made usually into cakes or bannocks, possess a composition not unlike wheat. Indian corn, which thrives luxuriantly on the American soil and is largely used here for B., as also to a considerable extent in the old world, differs little from wheat in the proportion of its ingredients. Rice is occasionally employed in making B., but it is not nearly so nutritious as wheat.

But though, with the exception of rice, the various kinds of grain do not sensibly differ in the amount of nutritious matter contained in the meal, yet there is great difference as to the quality of yielding a light, spongy bread. In this respect, the flour of wheat excels all others. This quality seems to depend upon the mechanical structure of the gluten of wheat, which gives a glutinous, sticky consistency to the dough, rendering it impervious to the carbonic acid gas formed in it during the fermentation, so that the gas thus imprisoned swells it up. The meal of other grains forms a more granular and less tenacious

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dough, which allows the gas to escape with more or less ease as it is formed. It is thus impossible to make a light, spongy loaf of oatmeal, however finely it might be ground. In the case of whole-meal B. or brown B., the rough, hard particles of the bran interfere with the ordinary tenacious quality of wheaten-flour, and make the dough slightly porous, so that much of the gas escapes, and thus this kind of B. is never so much raised as B. of fine flour.

BROWN, COMPOSITION, or WHOLE FLOUR B. is made from the ground but undressed wheat, and therefore contains the bran as well as the flour. Some years ago it was suggested, that as the bran contained more nitrogenized matter than the flour, the whole meal must be more nutritious than the finer flour alone. But that opinion is now considerably modified; for while it is true that the whole meal (bran and fine flour) contains chemically more nutritive matter than the fine flour alone, yet the gritty particles that are present in the former cause an unnatural irritation in the alimentary canal, and lead to a quicker evacuation of the partially digested and absorbed food. This explains why brown B. possesses laxative properties, and why laborers fed on it consider that it makes them hungry soon again; they feel that it does not last in the stomach, and consequently think it has little nourishment in it.

The *adulterations* of B. are various. Very commonly boiled potatoes are added to the flour and water in the making of the dough, and some consider that this yields a lighter and more palatable bread. It must be remembered, however, that the addition of any substance of a nature foreign to the composition of any material is an adulteration (see next article); and that, though potatoes may be supposed to improve the B., yet good B. can be made without them, and the addition of the potatoes lessens the nutritive value of the wheat-flour. Alum is occasionally added to the dough to increase the whiteness and improve the general texture of the B.; and this it appears to do by arresting the passage of the starch into gum and sugar, which tends to take place during the process of baking; and in Belgium, sulphate of copper is often used for a similar purpose. But these and similar admixtures are not only destructive of the nutritive value of a certain part of the B., but are also positively injurious in their effects on the animal system. For the nutritive qualities of B. see NUTRITION: FOOD: for biscuit-bread, see BISCUIT.

The *law* on the subject of B. is precise and strict in Britain as regards ingredients, weight, and manner of sale. Adulteration, or any sale of one kind of B. under pretense of selling another, are vigorously dealt with. In this country, the laws vary in different states; but in none do they approach the precision and strictness of the British statutes.

BREAD, ARMY: in camps and in barracks of any size, baked on the spot by bakers of the proper sub department of supplies. Though perhaps a little rough in its manufacture, the article supplied is made from the best ingredients, and is genuine and wholesome. On a march, the

BREAD-FRUIT TREE.

bakeries supply bread at the several halting-places. In smaller barracks, bread is often obtained by contract, under supervision of the proper officials.

BREAD-FRUIT TREE (*Artocarpus incisa*): tree of the nat. ord. *Artocarpaceæ* (q.v.), native of the islands of the Pacific Ocean and of the Indian archipelago—one of the most important gifts of nature to the inhabitants of these regions, its fruit supplying their principal food, and its inner bark a considerable part of their clothing, while its timber and its milky juice also are used for economical purposes. The genus to which it belongs (*Artocarpus*, Gr., Bread-fruit) is distinguished by having the male flowers in catkins, with a two-leaved perianth and one stamen; the female flowers naked; the fruit roundish, fleshy, and tuberculated. The B. T. is a rather slender tree, 40–50 ft. high, often rising almost half its height without a branch. It has large, pinnatifid leaves, frequently 12–18 inches long, dark green, and glossy. The fruit is generally oval, or nearly spherical, about the size of a child's head. It is a *sorosis*, a compound or aggregate fruit formed from numerous flowers on a common axis, and is covered with a roughish rind, which is marked with small square or lozenge-shaped divisions, having each a small elevation in the center; is at first green; when imperfectly ripened, brown; and when fully ripe, assumes a rich yellow hue. It is attached to the small branches of the tree by a short thick stalk, and hangs either singly or in clusters of two or three together. It contains a somewhat fibrous pulp, which, when ripe, becomes juicy and yellow, but has then a rotten taste. At an earlier stage, when the fruit is gathered for use, the pulp is white and mealy, and of a consistence resembling that of new bread. In a still less mature state, the fruit contains a tenacious white milk. The common practice in the South Sea Islands is to cut each fruit into three or four pieces, and take out the core; then to place heated stones in the bottom of a hole dug in the earth; to cover them with green leaves, and upon this to place a layer of the fruit, then stones, leaves, and fruit alternately, till the hole is nearly filled, when leaves and earth to the depth of several inches are spread over all. In rather more than half an hour, the bread-fruit is ready; 'the outsides are, in general, nicely browned, and the inner part, presents a white or yellowish cellular pulpy substance, in appearance slightly resembling the crumb of a wheaten loaf.' It has little taste, but is frequently sweetish, and more resembles the plantain than bread made of wheat flour. It is slightly astringent, and highly nutritious. Sometimes the inhabitants of a district join to make a prodigious oven—a pit 20 or 30 ft. in circumference, the stones in which are heated by wood burned in it, and many hundred bread fruits are thrown in, and cooked at once. Baked in this manner, bread-fruit will keep good for several weeks. Another mode of preserving it is by subjecting it in heaps to a slight degree of fermentation, and beating it into a kind of paste, which, although rather sour, is much used when fresh bread-fruit cannot be obtained. There are numer-

BREAD-NUT—BREADTH.

ous varieties of the B. T. in the South Sea Islands, and they ripen at different seasons. The tree produces two, sometimes three, crops a year. In the West Indies and South America, into which the bread-fruit has been introduced, it has not come much into use as ordinary food; but various preparations of it are reckoned delicacies.

The fibrous inner bark of young bread-fruit trees, beaten and prepared, is used for making a kind of cloth, much worn by the common people in the South Sea Islands, though inferior in softness and whiteness to that made from the paper mulberry (see MULBERRY, PAPER).—There exudes from the bark of the B. T., when punctured, a thick mucilaginous fluid, which hardens by exposure to the air, and is used, when boiled with cocoa-nut oil, for making the seams of canoes, pails, etc., water-tight, and as bird-lime.—The timber is soft and light, of a rich yellow color, and assumes, when exposed to air, the appearance of mahogany. It is used for canoes, house-building, furniture, and many other purposes. It is durable when not exposed to the weather.—the Jack (q.v.) or Jaca (*A. integrifolia*), and the DEPHAL (*A. Lakoocha*), both large East Indian trees, belong to the same genus with the bread-fruit tree.

BREAD'-NUT: fruit of *Brosimum alicastrum*, a tree of the nat. ord. *Artocarpaceæ*, therefore allied to the bread-fruit; native of Jamaica. The genus *Brosimum* is distinguished by male and female flowers on separate trees, in globose catkins, with peltate (shield-like) scales for perianth, and the fruit a one-seeded drupe. The B. tree has ovate-lanceolate evergreen leaves; it abounds in a tenacious gummy milk. Its leaves and young shoots are much eaten by cattle, but deleterious qualities are developed in them as they become old. The nuts boiled or roasted are an agreeable food, eaten instead of bread. Their taste resembles that of hazel nuts. To this genus the *Palo de Vaca*, or Cow TREE (q.v.), of Demerara is supposed to belong.

BREAD'-ROOT: see PSORALEA.

BREADTH, n. *brèdth* [Dan. *bred*, an edge or border Sw. *bradd*, edge (see BROAD)]: a noun formed from the adj. *broad*; extent of surface in the shortest direction; width. BREADTH'LESS, a. having no breadth.

BREADTH, in Art: that peculiar disposal of the background of a picture which, without sacrificing or even concealing details, gives to the whole unity and harmony of effect. Often used indefinitely, it is yet not without definite meaning. With the older landscape-painters, it was a common fault to produce the effect of distance either by a certain trick of light and shadow, or by one uniform hazy color in which the individual objects were entirely lost to view, and *breadth became vacancy*. In this respect, their pictures contrast unfavorably with those of such modern painters as Turner, of whom Ruskin has truly said that 'the conception of every individual inch of distance is absolutely clear and complete in the master's mind—a separate picture fully worked out: but yet, clearly and fully as the idea is formed

BREAD-TREE—BREAK.

just so much of it is given, and no more, as nature would have allowed us to feel or see ; just so much as would enable a spectator of experience and knowledge to understand almost every minute fragment of separate detail, but appears to the unpracticed and careless eye just what a distance of nature's own would appear—an unintelligible mass. Not one line out of the millions there is without meaning, yet there is not one which is not affected and disguised by the dazzle and indecision of distance. No form is made out, and yet no form is unknown.' On the subject of breadth Ruskin has, moreover, the following judicious remarks: 'It were to be wished that our writers on art would not dwell so frequently on the necessity of breadth, without explaining what it means, and that we had more constant reference made to the principle, which I can only remember having seen once clearly explained and insisted on—that breadth is not vacancy. Generalization is unity, not destruction of parts ; and composition is not annihilation, but arrangement of materials. The breadth which unites the truths of nature with her harmonies is meritorious and beautiful, but the breadth which annihilates those truths by the million is not painting nature, but painting over her ; and so the masses which result from right concords and relations of details are sublime and impressive, but the masses which result from the eclipse of details are contemptible and painful.'

BREAD'-TREE: see **CAFFER BREAD**.

BREAK, *n.* *brāk* [*AS. breccan*, to break, to overcome. *Goth. brikan*; *Ger. brechen*; *L. frangere*, to break: *Icel. braka*, to creak]: an opening or gap made by tearing; a rent; a tear; a pause or interruption; a stop. *V.* to separate or divide by force; to rend; to crush; to weaken or impair; to crack or injure; to violate a contract or promise; to tame or train; to interrupt; to lessen the force of; to dissolve or abandon; to issue; to force a way; to explain or open a matter to any one; to decline in health; to fail in business; to dismiss, as to 'break' or cashier an officer. **BREAK'ING**, *imp.*: *N.* shattering. **BROKE**, *pt.* *brōk*. **BROKEN**, *pp.* *brō'kn*. **BREAKER**, *n.* *brāk'ēr*, one who, or that which; a wave broken into foam by dashing on a rocky shore, or on invisible sunken rocks, showing danger of wreck to an approaching ship; something placed in a river for breaking the force of floating ice, or for breaking it up; a small cask for water—used in boats as ballast, and to meet emergencies. **BREAK'AGE**, *n.* *-āj*, a breaking; an allowance for articles destroyed in the carriage. **BREAKING**, or **BREAKING-IN**, taming or training horses. **BREAKING**, *n.* bankruptcy. **BREAKING-DOWN ROLLERS**, in *mech.*; rollers employed for the consolidation of metal by the process of rolling while hot. **BREAKING-ENGINE**, the first of a number of carding-machines, which receives and acts on the lap from the lapper. **BREAKING-FRAME**, a machine into which fragments of long-stapled wool are spliced together, and then drawn out to nearly eight times their original length. The fragments are produced by hand-combs, and taper toward the ends. **BREAKING-MACHINE**, an appliance for shortening flax-staple, to prepare it to be worked by

BREAKFAST—BREAKING INCLOSURES.

the proper machinery. **BREAK-NECK**, a. *-nĕk*, steep; dangerous. **BREAK-WATER**, n. *-waw'tēr*, a mound or wall built in the sea, or at the mouth of a harbor, to break the force of the waves and protect the shipping. **BREAK BULK**, to open a hole in a package or a load, etc., and take out some of it: see **SALE OF GOODS**. To **BREAK GROUND**, in *mil.*, to commence a siege by opening trenches; to begin a new undertaking by an opening act. To **BREAK DOWN**, to fail, or cause to fail. A **BREAK-DOWN**, a failure; an accident. To **BREAK THE BACK**, to dislocate the vertebræ or backbone, or to strain it severely; to ruin. To **BREAK A BANK**, to exhaust or over-strain its resources by any means, as by a sudden run upon it. **BREAK A LANCE**, to have a contest with in argument, as formerly knights did with lances on entering the lists with a rival. To **BREAK THE HEART**, to injure much, or to destroy with grief. To **BREAK UPON THE WHEEL**, to punish a criminal capitally by stretching his body upon a wheel and breaking his bones. To **BREAK FORTH**, to burst out; to exclaim. To **BREAK FROM**, to go away with some vehemence. To **BREAK IN**, to enter unexpectedly. To **BREAK INTO**, to enter by force. To **BREAK LOOSE**, to free from restraint; to escape into freedom. To **BREAK OFF**, to desist suddenly; to abandon. To **BREAK OUT**, to discover itself in sudden effects; to arise or spring up. To **BREAK THROUGH**, to force a passage. To **BREAK UP**, to dissolve; to put a sudden end to. A **BREAK-UP**, a failure; a dissolution. To **BREAK UPON**, to discover itself suddenly. To **BREAK WITH**, to come to an explanation with; usually to end a friendship; to quarrel. **BREAK OF DAY**, dawn; the light preceding the appearance of the sun above the horizon. **BREAKERS AHEAD**, evidence announcing the hidden and fatal dangers to be encountered by proceeding further.—**SYN.** of 'break, v.': to rend; tear; burst; crack; split; crash; shatter; batter; violate; destroy; infringe; demolish; —of 'breaker': wave; billow; surge.

BREAKFAST, n. *brĕk'făst* [*break*, and *fast*]: first meal in the day, or the food so taken: **V.** to take the first meal. **BREAK'FASTING**, n. in the act of taking breakfast.

BREAKING INCLOSURES: in Scotch Law: see **PLANTATION**.

BREAKWATER.

BREAK'WATER: barrier for protection of shipping in harbors or anchorages. It sometimes happens that, in front of a semicircular bay, a small island is so situated as to form a natural breakwater. This is to some extent the case with the Isle of Wight, which occupies such a position as to protect Portsmouth and Southampton from the south. A pier for a landing-place may be so placed and constructed as to serve also the purpose of a B., but the term B. is generally confined to a structure solely for protection, and not for berthage or traffic, and breakwaters are frequently insulated from any communication with the shore unless by water.

Plymouth B., England, is a well-known engineering work. The sound or harbor, being open to the south, was so much exposed to storms that, early in the present c., it was determined to construct a B. across its mouth, with openings between it and the shore, on either side, for the ingress and egress of shipping. The works were commenced 1812. The operations consisted in transporting along a tram road large blocks of limestone from a neighboring quarry, shipping them in vessels fitted with trap doors, and by means of these depositing them in the shape of a huge mound in the required situation. As soon as the stones began to appear above water a perceptible benefit resulted in the relative calmness of the sound during storms; but the structure was frequently very roughly handled by the waves, which altered and flattened its shape. A severe storm 1824, Nov., threw a great portion of the stones over into the sound. It was not until 1841 that the works were finally completed, by the deposition of more than 3,000,000 tons of stone, and the expenditure of nearly £1,500,000. The B. is nearly a mile long, the central portion is 1,000 yards; and two wings, of 350 yards each, extend from the ends of this at a slight angle. The open channels at each end, between the B. and the shore, are each about half a mile wide, and their depth is respectively 40 and 22 ft. at low water. The B. is 133 yards wide at the base, and 15 at the top—the two sides being made very sloping for the security of the stones. The slopes and top are faced with masonry. The water-space protected, comprises 1,120 acres.

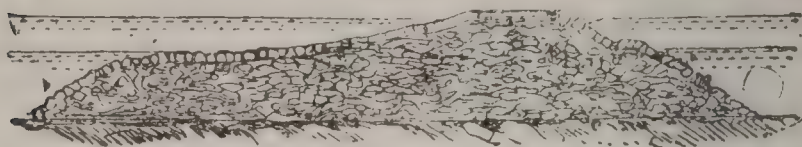
Holyhead B., England, is formed of stone quarried in Holyhead Mountain, drawn along a tram-way on a timber structure and cast into the sea. It more resembles a pier than the B. at Plymouth, for it is attached at one end to the shore, and is intended to convert Holyhead Bay or roadstead into a harbor of refuge. The works consist of a mound of loose stones up to low-water, and ashlar upright walls with a parapet above that line, with a railway on the top for trains.

Portland B., England, is of very great value, in converting into a harbor of refuge the expanse of water between the Dorsetshire coast and the isle, or rather peninsula, of Portland. An act of parliament, 1847, authorized the works. The B., starting from the n.e. point of the isle, stretches nearly n. for more than two m. with one or two intervening openings for the ingress and egress of shipping. The works

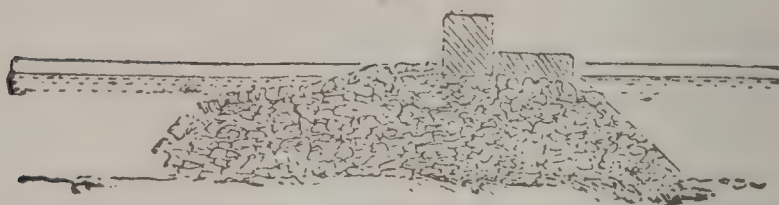
BREAKWATER.

were conducted more easily than those of any other great B.; for the isle contains an abundance of stone easily quarried, and the steep shores afforded facility for transporting the stones by their own gravity to their destination. The work, finished 1872, is for the most part a rough rubble stone-bank, the part next the island having, however, an ashlar superstructure and parapet; the depth is about 50 ft. at low water. From the nature of the operation, any part of the B. became useful as soon as constructed, increasing the safety of Portland Bay as a harbor of refuge.

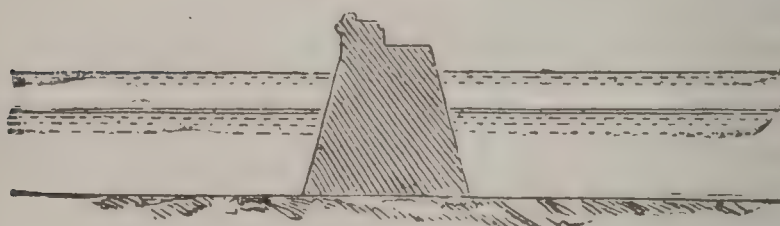
BREAKWATERS.—SECTIONS.



Plymouth.



Portland.



Dover.

0 100 200
Scale, in feet.

Dover B., England, progresses slowly, and has involved an enormous outlay. There is no stone near to form a mound, as in the other breakwaters spoken of, and, in consequence, the work requires to be brought up in solid ashlar from the bottom by the diving bell, with the interior formed of blocks of concrete. It has never been clearly stated whether the British government regards this B. as a protection to a great naval station and fortified harbor, or as a chief feature as a harbor of refuge for commercial fleets. In 1844, a commission of inquiry recommended that £2,500,000 should be laid out in forming a harbor of refuge here. The works connected with it have not been finished, the great depth and frequent storms constituting terrible obstacles. The water is very deep—viz., 42 feet at low water; the accumulations of shingle very troublesome; and many years must elapse before it can be made evident whether the Dover B. is worth the national money expended upon it.

BREAM.

Alderney B., in the English Channel, is a great work, consisting of ashlar walls and parapet, built on a stone mound up to low water from a depth of 72 ft.

Cherbourg B., France, is the greatest and most costly ever constructed. Nearly 100 years ago, M. de Cessart proposed to the French government the formation of a B. at Cherbourg, to be commenced by the construction of a number of hollow cones formed of timber-framing, sunk in a line as close as they could be placed to each other, and then filled with stones. These cones, of which there were to be 64, each about 70 ft. high, 150 ft. in diameter at the base, and 60 ft. at the top, were intended to form a nucleus to the stone breakwater, to prevent the stones, during its formation, being knocked about and too much spread out by the action of the waves. In 1784-88, 16 cones were constructed, and 13 of them sunk; but so great was the destruction which they underwent during stormy weather, that the government at length abandoned the plan, and carried on the stone breakwater without the aid of the cones. It was completed under Napoleon III. at a cost exceeding £2,500,000. The B. itself was finished 1853, but since that year large fortifications have been built upon the upper works. The length is nearly $2\frac{1}{2}$ m.; the B. is 300 ft. wide at the bottom, and 31 at the top. The chief mass consists of rubble or unshaped stones, thrown down from ships; but there is a larger ratio of wrought and finished masonry than in the Plymouth B., consisting of granite blocks embedded in cement. The depth of water is about 60 ft. at low-water spring-tides; and the B. rises to 12 ft. above high-water level. The water space included within and protected by the B., is about 2,000 acres, but two-thirds of this has scarcely depth enough for the largest sized ships. For the relation of this B. to the vast military and naval arrangements of the place, see **CHERBOURG**.

In the United States the principal B. is at the entrance of Delaware Bay, Lewes, Del. The plan, devised 1829, was completed 1870; and in the first year thereafter, more than 20,000 vessels visited the harbor so provided. The B. is of stone with rubble wall, abt. half a mile in length. Recently it has been extended and improved. A B. in Lake Erie, protects the harbor of Buffalo. There are some other B.'s, mostly small, on the Atlantic and Lake coasts.

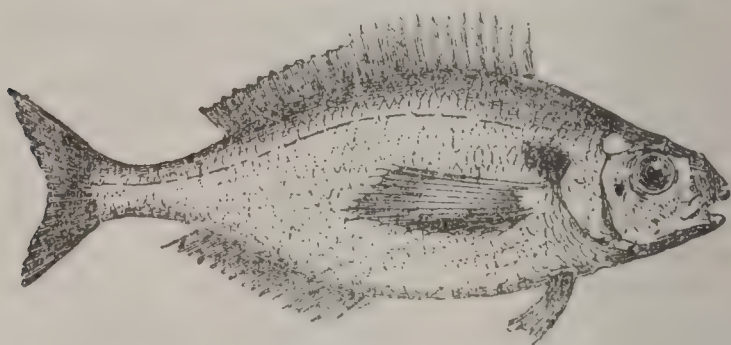
Many substitutes have been proposed for solid breakwaters, such as floating breakwaters constructed of timber framework, open iron screens, etc., but none of them have been shown practically adequate. Close timber-work, filled in with stones, is found to be quite efficacious; but on many coasts the timber is liable to be eaten by the marine worm, which is an almost insuperable objection to its being used under water.

BREAM, n. *brēm* [F. *brème*—from OF. *bresme*—from O.H.G. *brahsema*, a bream]: a broad-shaped fish. The name occasions some confusion to beginners in ichthyology, being popularly applied equally to certain fresh-water fishes of the family *Cyprinidæ* (q.v.), and to certain sea-fishes of the families *Sparidæ* (q.v.) and *Chætodontidæ* (q.v.)

BREAM.

or *Squamipennes*, among which the resemblance is a mere general one of outward form—the first of these families belonging to the order of *Malacopterous*, or soft-finned; the other two to that of *Acanthopterous*, or spiny-finned fishes.

The breams of the family *Cyprinidæ* were included in the genus *Cyprinus* (see CARP) by the older naturalists, but are readily distinguished from that genus as now defined, and from other allied genera, by their deep and compressed form, by the great convexity of both the dorsal and the abdominal outline, by the want of spiny rays in the dorsal and anal fins, by the great length of the base of the anal fin, and by the want of cirri or barbules at the mouth. They form the genus *Abramis* of Cuvier.—The COMMON B., or CARP B. (*A. Brama*), is an inhabitant of many rivers and lakes of Europe, even as far north as Norway and Sweden, and of some of those of Britain and Ireland. It thrives best in still waters, and in some of the Irish lakes attains a large size; it has been known to reach 12 or even 14 pounds. The tail is very broad and much forked, the head small and



Common Sea Bream (*Sparus centrodontus*).

acuminated, the eyes very large, the scales small, the general color yellowish-brown, the cheeks and gill-covers silvery white.—The WHITE B., or BREAMFLAT (*A. Blicca*) differs from the Common B. in its silvery color, the smaller number of rays in the pectoral and anal fins, and other particulars. It has never been taken of so large a size. It is found in many parts of the continent of Europe, and in some of the British lakes and rivers.—The POMERANIAN B. (*A. Buggenhagii*) differs much more widely from the Common B.; the body is much thicker in proportion to its depth, the scales larger, the base of the anal fin shorter, the tail less forked. This fish is known to occur in a few places of England and Ireland, and is said to abound in Pomerania.

The acanthopterous Breams, or SEA BREAMS, are mostly of the family *Sparidæ*, and nearly allied to the Gilthead (q.v.), in connection with which they may most properly be noticed. The common Sea B., indeed, often receives the name of gilthead. Only one of the British sea fishes called B., the *Brama Raiti* already noticed (see BRAMA), belongs to the family *Chætodontidæ*.

Angling for Bream.—Of the two kinds of B. known to anglers, the carp B. is much the best for sport. The flesh of the B. is not held in much estimation, though the carp

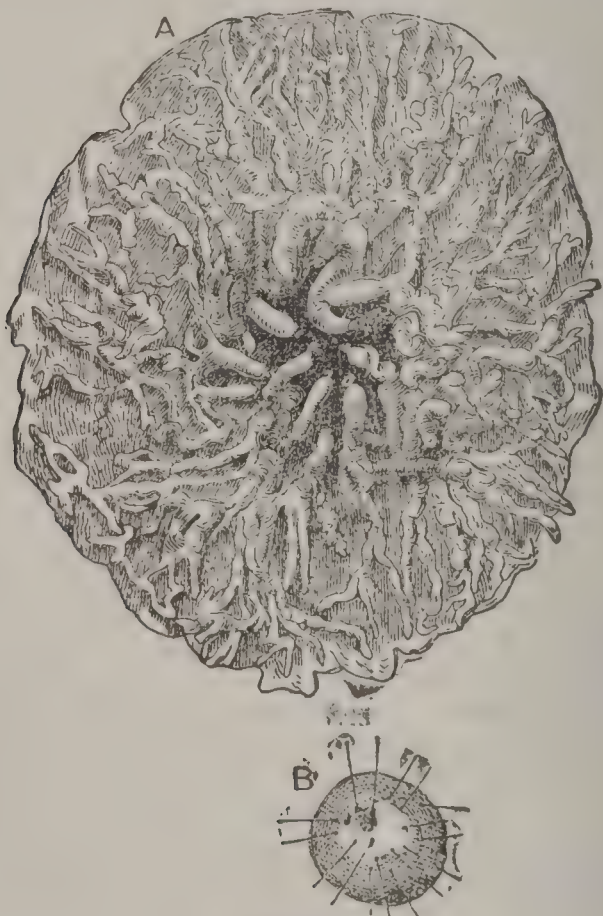
BREAM.

B. is much to be preferred of the two. B. are found in both ponds and rivers. They prefer deep, still holes, or quiet, well-sheltered eddies in the bends of rivers. Here the angler will find them in large numbers. They are rather capricious in feeding; at times they will not bite for weeks together. Being a sly, shy-biting fish, the tackle required for them must be fine. They may be taken by means of the ledger (q.v.) in rivers, where they should be fished for in the same way as directed for barbel, except that it will be found advisable to use another hook, which should be fastened to the line about eight inches or a foot above the ledger lead, as B. often take their bait some inches off the bottom. The hooks should be No. 7. In float-fishing for B. in holes or eddies, a stout swan-quill float and half-a-dozen No. 1 shot below it, will be found sufficient for the purpose; and having ground-baited as directed for barbel, put on two small red worms for the angling bait, or about an inch of the tail of a bright, well-scoured lob-worm. The former is preferable. Two hooks, one to rest on the bottom, and one 6 or 8 inches off it, will be found useful, for sometimes one will be taken, and sometimes the other. The fish being tender-mouthed, should be played gently. After the first rush, a B. soon tires, for his form is not fitted or shaped for a prolonged resistance. The B. has an unpleasant practice of boring downward and rubbing the line with his tail, and the line often comes up covered with a thick slime from his body, for a foot or more above the hook. This must be cleared off before the tackle is again used. The rod should be a light cane-rod, moderately stiff, and 12 or 13 ft. long for float-fishing for B. from a boat or punt. Of all baits, worm is decidedly the best. Some recommend bullock's blood and grains to ground bait with, but worms answer all purposes. B. spawn about the end of May, choosing the most weedy spots for that purpose; and after scouring and cleansing in some gentle gravelly stream for a week or two, they return to the deep still holes again. A clay or sandy bottom is preferred to any other. The presence of B. may always be detected by their fondness for coming at times to the top of the water, or, as anglers term it, 'primeing.' Early in the morning, or late in the evening, the whereabouts of B. may always be discovered by their rising then. In Lough Erne the shoals are prodigious, and cause a ripple on the water like a stiff breeze of wind.

BREAM, v. *brēm* [probably a corruption of *broom* in the sense of 'to clean by sweeping']: among *seamen*, to burn off the sea-weed, ooze, etc., from a ship's bottom. **BREAMING**, imp.: **BREAMED**, pp. *brēmd*. A ship's bottom often becomes covered with grass, ooze, shells, or sea-weed; and breaming consists in the removal of these impurities. The ship is laid aground after the tide has ebbed, or is docked, or is careened (see **CAREENING**); furze and fagots are placed under it; fire is applied; the heat melts the pitch, etc., of the hull; and the pitch and filth can then be scraped and brushed off.

BREAST.

BREAST, n. *brēst* [AS. *breost*; Goth. *brusts*; Dut. *borst*, the breast: O.H.G. *prust*, a bursting, the breast]: the fore part of the human body, between the neck and the belly; in quadrupeds, the part between the fore feet; the heart; the conscience; the affections; in *mining*, the face of coal-workings; the wooden partition that divides a shaft from bottom to top into two compartments: V. to meet in front. **BREASTING**, imp. **BREAST'ED**, pp. **BREAST-DEEP**, or **BREAST-HIGH**, up to the breast. **BREAST-FAST**, a large rope to affix a ship by her side to a quay or to another vessel. **BREAST-HARNESS**, a horse-gear arranged to pull by a band in front of the breast, instead of a collar. **BREAST-**



Breast:

A, lactiferous ducts dissected out and injected; B, nipple, with bristles inserted into the orifices of the lactiferous ducts.

HOOKS, or **BREAST-KNEES**, timbers placed in the forward part of a vessel across the stem to unite the bows on each side. **BREASTPLATE**, n. armor for the breast. **BREAST-RAIL**, the upper rail of the balcony on the quarter-deck. **BREAST-STRAP**, a strap passing from the hame-rings, or from the gullet of the collar, to support the tongue or pole of the vehicle. **BREAST'-WHEEL**: see **WATER-POWER**. **BREAST-WORK**, in *fort.*, a mass of earth hastily thrown up for defense as high as the breast; in *nav.*, a set of framing terminating the quarter-deck and poop at the foremost and after end of the forecastle; a parapet not high enough to require a banquette (q.v.): a breast-work is, in size and importance, between a parapet and an *épaulement*. **BREAST-**

BREAST—BREATH.

BONE, the bone at the breast; the sternum. **BREAST-PIN**, an ornamental pin used to fasten a necktie or any similar covering over the breast. **TO MAKE A CLEAN BREAST**, to make a full and free confession of particulars.

BREAST, THE FEMALE: the mammary gland; a series of tubes, radiating from a common centre, the nipple, around which is an areola or dark-colored patch. On the surface of the latter are several (4–10) sebaceous glands, which secrete an unctuous fluid to protect the skin of the nipple, which is very thin, from the saliva of the sucking infant. The milk-tubes (15–18 in number) enlarge into *sinuses*, and pass each to a separate lobe or subdivision of the breast, where they divide into twigs and branches (the *lactiferous ducts*), which end in minute vesicles. The lobes are held together by fibrous tissues, and are well packed in fat, which increases sometimes to an enormous extent the apparent size of the organ.

The accompanying cut shows the structure of the gland. Over-distension of these delicate tubes, from whatever cause, must be productive of great suffering. When an abscess forms in the B., it is very dangerous to allow the matter to remain; but when an opening is made into an abscess of the B., the cut must be made in some line radiating from the nipple, so as to avoid division of the milk-tubes.

BREAST-PLATE, in Ancient Armor: a plate of iron, steel, or other metal, so fastened as to protect the chest or front of the wearer. The back-plate, in like manner, was



Breastplate.



Backplate.

worn to protect from attack from behind. In modern European armies, almost the only representative of the B. is the front half of the *cuirass*, worn by the *cuirassiers* in certain continental states, and by the household cavalry (Life-guards and Horse-guards) in England.

BREAST-WHEEL: see WATER-POWER.

BREATH, n. *brēth* [AS. *bræth*, an odor, scent: O.H.G. *prādam*, steam, vapor]: air drawn into the lungs of animals and driven out from the same—in man and the more highly organized animals, through the mouth and nostrils; respira-

BREATH—BREBEUF,

tion (see RESPIRATION); a single drawing in and driving out of air; a gentle breeze of air; life; pause; time to breathe; an instant. BREATHE, v. *brēth*, to draw in and give out air; to live; to rest; to speak softly to; to express, as words. BREATH'ING, imp.: N. respiration; utterance; an ardent desire or longing after; secret prayer; accent: ADJ. living; vital. BREATHED, pp. *brēthd*. BREATH'ER, n. one who. BREATHFUL, a. *brēth'fūl*, full of breath. BREATH'LESS, a. out of breath. BREATH'LESSLY, ad. *-li*. BREATH'LESSNESS, n. state of being out of breath. BREATHING-PLACE, n. *brēth'ing-*, a pause. BREATHING-TIME, n. pause; relaxation. TO TAKE BREATH, to take rest after being somewhat breathless by exertion. OUT OF BREATH, exhausted and panting through exertion. TO BREATHE ONE'S LAST, to expire; to die. ROUGH BREATHING, in *Greek words*, the mark (‘), as a reversed comma, placed over a vowel to show that it is to be pronounced as if preceded by (*h*); the *spiritus asper*. SOFT BREATHING, the mark (ˊ) indicating the absence of the (*h*); the *spiritus lenis*.

BREATH, OFFENSIVE: a disagreeable affection arising either from some cause limited to the mouth or nose, or from diseased conditions of the respiratory or digestive apparatus. If, from want of proper attention, the teeth have collected a quantity of putrescent particles around them, they must be well scrubbed with a brush and tepid water, with some powdered carbonate of magnesia mixed with it. A wash composed of a teaspoonful of tincture of myrrh in a pint of water is also very useful. Occasionally, the secretion from the tonsils (q.v.) is very offensive; and then a solution of nitrate of silver, 4 grains to 1 ounce of water, should be applied to them every morning, with a camel-hair brush, and small alterative doses of medicine administered. Solutions of soda in water are also very useful. Should the fetid smell arise from a portion of dead bone, the latter must be removed whenever it becomes loose. Inhalations of steam from hot water into which some creosote has been dropped, is much recommended for cases in which the cause resides in the nose and respiratory passages. When, however, the trouble is caused by digestive derangements, the treatment should consist in purging, to empty the intestinal canal, followed by soda, to correct acidity, and tonics, of which the bitter infusions and tinctures and the dilute mineral acids are among the best.

All medical treatment is unavailing to correct the foul odor which rises from the stomach of the habitual drunkard, or from the victim of gangrene or abscess in the lungs.

BREATH-FIGURES: see COHESION FIGURES.

BREBEUF, *brā-béf'*, JEAN DE: 1593–1649; b. Bayeux: French missionary. He entered the order of Jesuits, and was one of the first missionaries sent to Canada, whither he went with Champlain, 1626. He went among the Hurons, learned their language, and translated the catechism into that language. Champlain published this specimen of the language of the Indians of Canada, in his

BRECCIA—BRECKINRIDGE.

Voyages of New France (Paris, 1658). Some of B.'s writings on the Huron language were translated by Albert Gallatin. In 1649 he and his companion, Lalemont, were captured by the Iroquois, and tortured to death by slow fire.

BRECCIA, n. *brĕk'shĭ-ă* [It. a crumb or fragment]: in *geol.*, any rock composed of an agglutination of angular fragments, cemented together by an enveloping paste hardened, or by infiltrated iron or carbonate of lime—a *conglomerate* being composed of rounded water-worn pebbles. **BRECCIATED**, a. *brĕk'shĭ-ă-tĕd*, composed of angular fragments cemented together. **OS'SEOUS-BRECCIA**, n. a rock composed of fragments of bone cemented together.

BRECHE-DE-ROLAND, *brĕsh-dĕh-rō-lōng'*: defile of the Pyrenees, between France and Spain, about 11 m. s. of St. Jean de Luz, about 9,500 ft. above the sea. It is a difficult passage of from 200 to 300 ft. in width, between precipitous rocks rising 300–600 ft.

BRECHIN, *brĕk'n*: town of Forfarshire, on the left bank of the South Esk, 8 m. w. of its junction with the sea at Montrose. It unites with Montrose, Arbroath, Forfar, and Bervie in returning one member to parliament. Spinning, bleaching, distilling, and brewing are carried on, as also the manufacture of linens and sailcloth. B. was anciently a walled town, and contained an abbey of Culdees, instituted probably about the end of the 10th c. David I. founded a cathedral and bishopric here in the 12th c. Part of the cathedral, built chiefly in the 13th, 14th, and 15th c., is now the parish church. Close to the church is a round tower, similar to the Irish ones, and to the one at Abernethy, the only other example in Scotland. The tower is 85 ft. high, 25 ft. in diameter at the base, and 12½ ft. at the top, and it is surmounted by a 15th c. spire of 25 ft. B. Castle, the ancient seat of the Maules (now of their representative, the Earl of Dalhousie), was taken by Edward I., 1303, after a siege of 20 days. B. was burned by Montrose, 1645; and near it, Huntly, on the part of James II., defeated the Crawfords in 1452. Gillies, the historian of Greece; Maitland, the topographer; and Dr. Guthrie, the famous Scotch preacher, were natives of B. Pop. (1881) 9,031; (1891) 8,955.

BRECKINRIDGE (or **BRECKENRIDGE**), **JOHN CABELL**: 1821, Jan. 21—1875, May 17; b. near Lexington, Ky.: statesman and general. He studied law and practiced in Lexington; served in the Mexican war; was elected to congress in 1851, and re-elected in 1853. In 1856 was elected vice-president of the United States, and in 1860 nominated for president by the extreme Southern Democrats, but defeated. He was in the confederate service as a general, and in 1865 was appointed secretary of war. At the close of the war, he escaped to Europe, but returned in 1868, and was engaged in his profession till his death.

BRECKENRIDGE, **ROBERT JEFFERSON**, D.D.: 1800, Mar. 8—1871, Dec. 27; b. Cabell's Dale, Ky.: Presb.

BRECKENRIDGE—BRECKNOCKSHIRE.

clergyman, teacher, and author. He studied at Princeton, Yale, and Union colleges, graduating at Union in 1819. He practiced law eight years, and was four years a member of the legislature. He then studied theology, and became pastor of the Second Presb. ch. in Baltimore, 1832; pres. of Jefferson College, Penn., 1845; supt. of public instruction in Ky., 1847, and prof. of theol. in the theol. seminary at Danville, Ky., 1853. Among his works are *The Knowledge of God Objectively Considered* (1857), and *The Knowledge of God Subjectively Considered* (1859). In the civil war he supported the Union.

BRECKENRIDGE, WILLIAM CAMPBELL PRESTON: 1837, Aug. 28; b. Baltimore, Md.: politician. He graduated from Center College, Danville, Ky., 1855; graduated in law at the univ. of Louisville, Ky., 1857. He was prof. of equity jurisprudence in Cumberland Univ., Lebanon, Tenn. He served as colonel in the Confederate army. He was elected to congress 1884, and served till 1894, when he failed of re-election in consequence of a breach-of-promise suit that had been instituted against him.

BRECKNOCKSHIRE, *brĕk'nōk-shēr*: or **BRECON**, *brĕk'un*: inland county of s. Wales, s. of Radnor, from which it is separated by the Wye. Its length is about 35 m.; average breadth, 20; 719 sq. m., of which two-thirds are cultivated. B. is one of the most mountainous counties in s. Wales, and has deep, beautiful, and fertile valleys. Two principal mountain-chains, the highest in s. Wales, rising with Brecknock Peaks 2,862 ft., intersect the county in the n. and s., and occupy, with their offshoots, a great part of the surface. Old red sandstone occupies the south and middle of the county, and Silurian rocks the north. The chief rivers are the Wye, Usk, Yrfon, Elan, Claerwen, and Tawe. The climate is severe and rainy but healthful among the mountains, and in the valleys comparatively mild. The agriculture, though still defective, especially in the higher districts, was greatly improved by the Brecknockshire Agricultural Soc., instituted 1755. The chief crops are oats and barley, but much wheat also is grown in Talgarth and Crickhowell, the most fertile districts of the county. In the valleys in the e. some hops are raised, and there are some orchards. The native small black-cattle are reared in the hills, while in the lowlands the Hereford breed predominates. The mineral product is small, consisting of iron, especially along the s. border; coal and limestone also are found in the s. and w. The Brecon canal connects the county with the Bristol Channel, and many railways have been constructed. There are several small factories of woollens and worsted hosiery; also several important iron-works, but the ore is obtained chiefly from adjoining counties. The chief towns are Brecon (the county town), Builth, Crickhowell Hay, and Llanelly. There are many remains of British and Roman camps, Roman roads, cairns, cromlechs mounds, and castles throughout the county. B. formed part of the territory of the Silures, who bravely with

BRECON—BREDERODE.

stood the Romans. The Normans, under Barnard Newmarch, wrested the county from the Welsh princes 1092. Llewelyn, the last British prince of Wales, was killed in this county, 1282, and by his fall the native mountain-chiefs were entirely subdued. Half the people in B. still speak Welsh. B. returns one member to parliament. Pop. (1881) 57,745; (1901) 54,211.

BRECON, *brĕk'un*, or BRECKNOCK, or AB'ERHOND'DU: cap. of Brecknockshire, s. Wales; in an open valley in the middle of the county, at the confluence of the Usk, Honddu, and Tarell, 171 m. w.n.w. of London. It is in the midst of fine mountain scenery, and has beautiful public walks. South of B. lie the three mountain-peaks, the Brecon Beacons. Flannels, coarse woolens, and hats are manufactured. Barnard Newmarch, a relative of William the Conqueror, founded the town, and built a castle here, 1094. He also founded two priories here in the reign of Henry I. Henry VIII. turned one of the priories into a college, still existing; the other is now the parish church. B. was formerly surrounded by a wall having ten towers and five gates. Hugh Price, founder of Jesus College, Oxford, and Mrs. Siddons, the celebrated actress, were natives of B. Pop. (1881) 6,372; (1891) 5,646.

BRED; pp. of BREED, which see.

BREDA, *brā-dā'*: town of N. Brabant, Holland, at the confluence of the navigable rivers Merk and Aa. It formerly possessed the means of laying the surrounding country under water in the event of an attack, but the importance of the town, as a military position, has passed away, and in 1876 the fortifications were removed. It has a Gothic cathedral, with a lofty tower and several interesting monuments; also an old castle built 1350, which was for some time the residence of Charles II. of England, and is now a military acad. There are manufactures of carpets, linen, hats, soap, leather, etc.; and dye-works, breweries, and rope-walks. It is celebrated as the place where, 1566, the protest of the Dutch nobles, known as the 'Compromise of Breda,' against the measures of Philip II. of Spain in the Netherlands, was presented and rejected. During the subsequent centuries, it was the scene of much conflict and diplomatizing until 1813, when the French were finally driven out. B. is a very important railway centre. Pop. (1901) 26,296.

BREDA, *brĕh-dā*, JAN VAN: 1683-1750: Flemish painter of landscapes, battles, etc. He copied the works of Breughel and Wouverman so cleverly that it was difficult to distinguish the copy from the original. Descamps specially praised his touch and distances and skies.

BREDERODE, *brā-dēh-ro'dēh*, HENDRIK VAN, Count: 1531-68; b. Brussels: a sovereign count of Holland, who was an aggressive, active leader against the ascendancy of the Spaniards in his native land. He was a follower of Egmont and Horn, but his impulsiveness caused as much dissatisfaction to his own party as to that of his opponents. His cause was unsuccessful, the complete victory of the

BREDEVOORT—BREECH.

Spaniards making it necessary for him to flee the country. He took refuge in Germany, but survived but a short time, dying from disappointment and intemperance.

BREDEVOORT, *brā'dēh-vōrt*: town of the Netherlands, in the province of Gelderland, on the Bredevoorter-Aa, in a low, marshy district, 30 m. s.e. of Arnhem. Pop. 1,025.

BREDOW, *brā'do*, **GABRIEL GOTTFRIED**: 1773–1814; b. Berlin. German historian, and prof. of history at Breslau in 1811. He is known to English readers through the translation of his *Manual of Ancient History; Researches on History, Geography and Chronology; Memorable Events of Universal History*; and other works in the same department.

BREE, or **BRIE**, n. *brē* [AS. *brīwan*, to brew; Icel. *brugg*, a decoction; Ger. *brühe*, broth, sauce]: in *Scot.*, the liquid that has been brewed; any liquid; broth; soup; the brine of a herring-barrel. **BARLEY-BREE**, malt-liquor; whisky.

BRÉE, *brā*, **MATTHÆUS IGNAZIUS VAN**: 1773, Feb. 22–1839, Dec. 15; b. Antwerp: excellent Flemish painter. He was educated partly at Antwerp, and partly under Vincent in Paris. As early as 1798, he attracted attention by his *Death of Cato*, and several other excellent pictures soon followed. A peculiar talent for rapid and vivid sketching enabled B. to execute for Napoleon, in a few hours, *The Maneuvering of the Fleet before Antwerp on the Scheldt*; and, with equal celerity, Napoleon's *Entrance into Amsterdam, at the moment when the Magistrate presents him with the Keys of the City*. In 1816, he painted the famous Leyden burgomaster, Van der Werff, in the act of addressing the famished and murmuring populace during the siege of 1576. 'Take my body, and share it among you.' This great work—now in the town-house of Leyden—is marked by a felicitous arrangement of the figures, and by a bold and lively coloring, after the style of Rubens. Other celebrated pictures of B.'s are *Count Egmont receiving Spiritual Consolation before his Execution*; *Rubens dictating his Dying Testament*; *The Tomb of Nero at Rome, with a Group of Lazzaroni and Musicians*. In the latter part of his life, he was director of the Acad. of Fine Arts at Antwerp.

BRÉE, **PHILIP JACOB VAN**, his brother (1786–1871, d. Brussels), also acquired some reputation as a historical painter.

BREE, **ROBERT**: 1759–1839; b. Warwickshire: English physician, who practiced in London, and published *An Inquiry into Disordered Respiration* (1797).

BREECH, n. *brīch* [AS. *bræc*; L. *braccæ*; Icel. *brok* plu. *brækr*; It. *brache*; OF. *bragues*, trousers; Scot. *breeks*, trowsers—from Gael. *briogais*, breeches]: the part where the body separates into two legs: V. to put into breeches; to whip on the breech. **BREECH'ING**, imp.: N. the part of a harness which passes round the hinder part of a horse. **PLU.** the strong ropes with which cannon are lashed or fastened to the ship's side, checking the recoil at such a point

BREECH—BREECHES REVIEW.

that the muzzle is brought wholly within the port-hole, where it can be sponged and re-loaded. BREECHED, pp. *bricht*. BREECHES, n. *brich'ëz*, a close-fitting garment worn by men, lads, and boys, covering the lower part of the body; trowsers, originally terminating immediately beneath the knees. TO WEAR THE BREECHES, a familiar term to a wife who usurps the husband's place and power in a household.

BREECH, n. *brëch* [from preceding entry]: the hinder part of anything, especially of a gun: see CANNON; HOWITZER, etc. BREECH'-LOADING, a. in *mil.*, receiving the charge at the breech instead of the muzzle. BREECH-LOADER, n. a firearm that receives its charge at the breech, or thick end. BREECH'-SIGHT, the hinder sight of a gun. In conjunction with the front sight it serves to aim the gun at an object.

BREECHES BIBLE: see BIBLE.

BREECHES REVIEW. a name by which the *Westminster Review* was formerly known among book-sellers—so called from Mr. Place, an authority with that periodical. He had at one time been a tailor and leather breeches maker.

BREECH-LOADING GUNS.

BREECH-LOADING GUNS: ordnance or hand-fire-arms constructed for charging at the breech instead of muzzle. Great strength and accuracy are requisite in the breech-mechanisms, which are the devices for opening the rear ends of guns in such manner as to enable them to be loaded at the breech, and closing them in such manner as to prevent escape of gas therefrom when guns are fired.

When a charge is ignited, the constituents of the gun-powder, assuming a gaseous condition under the heat engendered, expand into a volume of light gas many times greater in bulk than the powder before occupied. As this expansion of gas gives the shot its force, escape of any of it through a joint in the breech lessens the range and penetration; while the shock of the explosion tends yet more to dislocate the breech-piece. In weapons which do not call for a long range, as revolver pistols, perceptible interval is left between the chamber and barrel, through which much gas escapes; but in rifles a firm close joint is indispensable. Gas is far from pure as generated in a gun-barrel, for much water is produced and held in suspension, while there is also a solid residuum of unburned materials of the powder. In the muzzle-loader, these clog (or technically, foul) the barrel, filling grooves, and rendering the ramming home of succeeding charges more and more difficult. The effect is that a solid mass of unburned matter is gradually forced by ramming into the head of the barrel, destroying the accuracy and usefulness of the weapon. In the breech-loader this solid deposit must be provided against both ways. The backward throw on firing (for, of course, the charge explodes with equal power in every direction) tends to force it into the mechanism of the joints, preventing their proper fit, and continually augmenting the escape of gas; and on the other hand, the deposit in front is most detrimental to accuracy of fire. This protection to the breech-apparatus, the prevention of fouling, and the retaining, and if possible improving, the force and accuracy of fire, were the problems which inventors had to solve.

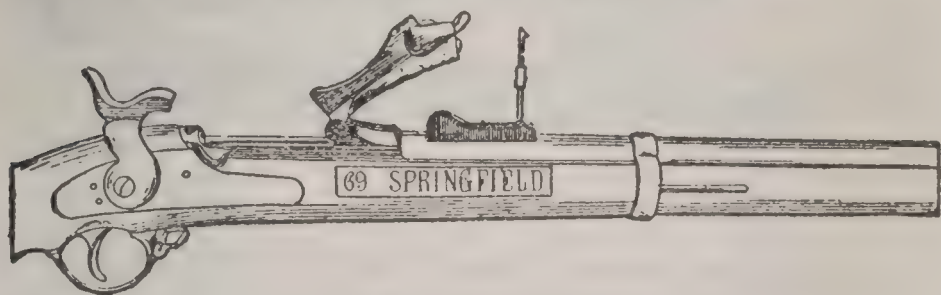
Since the discovery of gunpowder, breech-loading guns have been made. The Prussian army in its campaign against Denmark and Austria, 1864 and 66, was the first to demonstrate in battle their great value. Notwithstanding the disadvantages incident to the use of paper cartridge in the Prussian needle gun, the military world was awakened by it to immediate necessity of re-armament. In the U. S. efforts had been made as early as 1818 to introduce the Hall gun; and in the war of the rebellion, Spencer, Sharp, Henry, and Maynard rifles were used to some extent, though the main armament was with muzzle-loaders. During the decade 1866-76 nearly all nations armed their troops with breech-loading rifled small arms. In the experimental guns the calibre, or diameter of bore, was .52 to .70 inch; the bullet weighed 400 to 700 grains; and the charge of powder varied from 60 to 90 grains, giving initial velocity about 1,000 ft. per second.

The early breech-loading small arms were non repeat-

BREECH-LOADING GUNS.

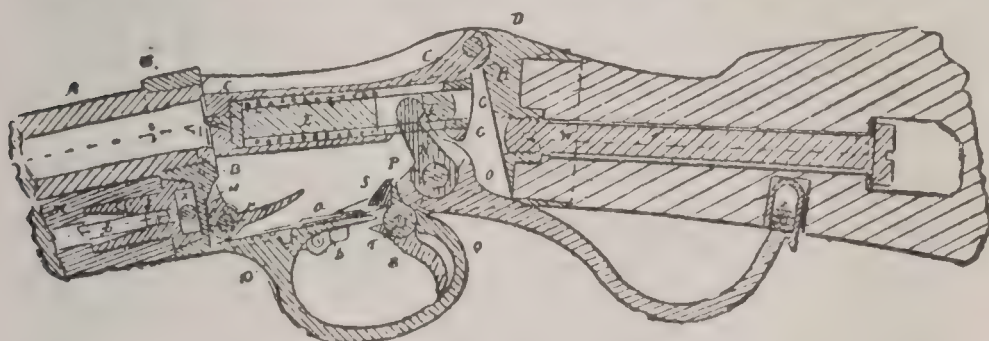
ing or single loaders, and may be generally classified thus: (1) Those in which the breech was closed by a swinging block hinged at the front, side, or rear—the block rotating upward in opening the breech; (2) Those in which the breech or bottom of the bore was closed by a rotating or sliding block operated by a lever from below; (3) Those in which the breech was closed by a bolt.

The great advantage of the first system was that, as the block rotated, it revolved away from dust and rust, and the motion of opening or closing the breech did not in it self tend to accumulate these retarding substances so as to render more difficult these movements. The best example of this system is the Springfield rifle, with which the U. S. troops have been armed since 1873.

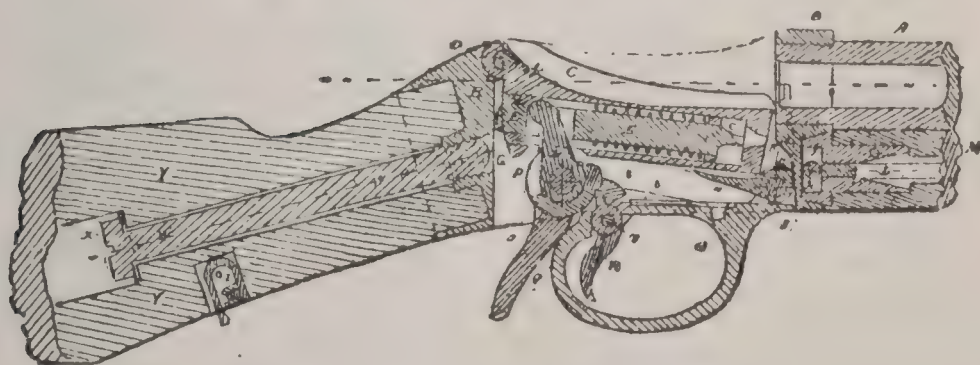


Springfield Rifle.

The second class is well illustrated by the Winchester and the Martini-Henry; the breech-loading mechanism of the latter had its origin in this country, but was adopted with some modifications in England as the service arm.



Section closed with spring cased.



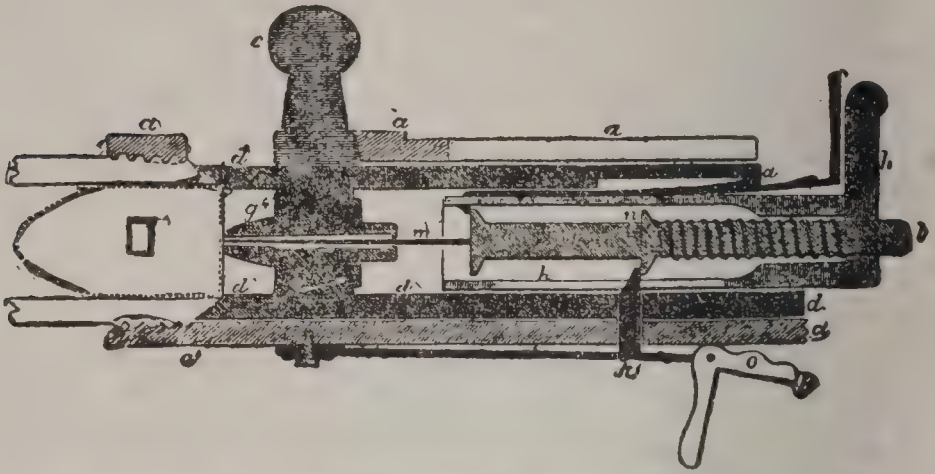
Section open with spring compressed.
Martini System—1877.

The third class is well illustrated in the original needle-

BREECH-LOADING GUNS.

gun (see figure below); later in the Mauser; and to-day in all the principal magazine guns of the world.

While the first system was preferable as a single loader, the bolt-gun was best adapted to magazine arms, as by the bolt the cartridges are automatically pushed into the chamber after being fed into the receiver.



Section of original Prussian Needle-gun: Full-cock.

The following table shows the systems of single shot breech-loaders adopted by the principal powers, to 1883:

Country.	System Adopted.	Type.	Bore, inches.	Weight of rifle, lbs.	Weight of bullet, grains.	Weight of powder, grains.
Austria.....	Wendle	Vibrating block	.450	9.88	318	65
Belgium.....	Albini-Braendlin	Swinging block	.433	10.14	386	77
Denmark.....	Remington	Falling block	.450	9.08	370	66
England.....	Martini-Henry	Falling block	.450	8.75	480	85
Turkey.....	Peabody-Martini	Falling block	.450	8.75	480	85
France.....	Gras	Sliding block	.433	8.93	386	75
Germany.....	Mauser	Sliding bolt	.433	10.75	385	74
Holland.....	Beaumont	Falling block	.433	9.59	336	66
Italy.....	Vetterli	Sliding bolt	.412	6.61	308	58
Russia.....	Berdan	Sliding bolt	.420	8.48	370	78
Sweden.....	Remington	Falling block	.480	9.55	370	66
United States....	Springfield	Swinging block	.450	9.13	405	70

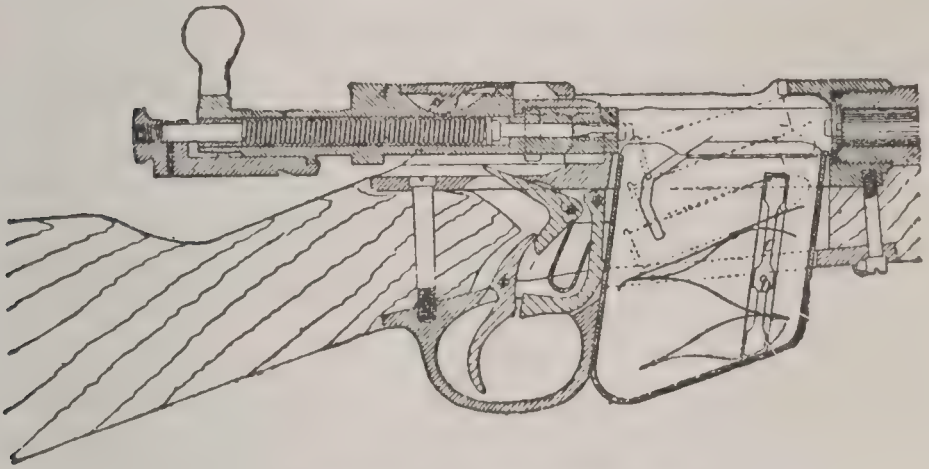
Switzerland alone had in the modified Vetterli a repeating rifle. Other nations were experimenting.

In 1882 many magazine systems were tested by a board in this country, and guns of three representative systems were ordered made and issued to troops, viz.: the Lee, the

BREECH-LOADING GUNS.

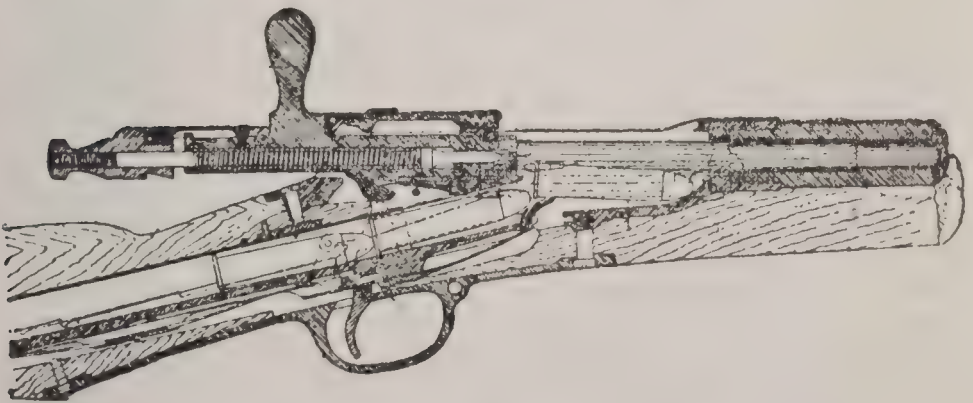
Chaffee-Reece, the Hotchkiss. All were bolt guns, and of American invention, and illustrated the first two of the three principal classes of magazine guns. The three classes are: (1) Those in which the magazine is centrally disposed, the cartridges parallel to and one upon another (2) Those in which the cartridges are in the butt-stock in a column, the axes in the same line, inclined to the axis of the barrel; (3) Those in which the cartridges are in the tip-stock, in a column under the barrel, the axes being in the same line.

In the Lee magazine gun the cartridges are in a detachable magazine, which may be applied at will. The gun is used as a single loader ordinarily; the magazine is a separate piece. It was the first gun of the central magazine system—now almost universally adopted—constructed in numbers. Capt. A. H. Russell, U. S. Army, was the first to make the central magazine a permanent part of the gun, loading it from cartridge holders or clips.



Lee Magazine Gun—Model 1882.

In the Chaffee-Reece of 1882, the cartridges were in the butt-stock, so arranged by a separating bar, as to be held

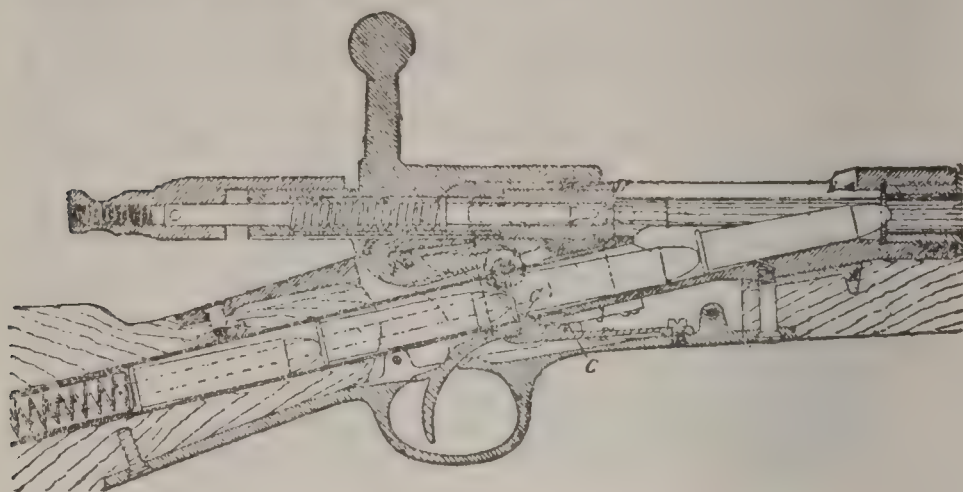


Chaffee-Reece Magazine Gun—1882.

from being in contact at the time of fire, and capable of being fed up by means of ratchet bars in the magazine.

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The Hotchkiss gun also was of the class in which the cartridges were in the butt-stock; they were fed up by a spiral spring in rear of the column.



Hotchkiss Magazine Gun—1882.

None of these guns met with favor in the hands of the troops.

The last of the three classes above noted is illustrated by the well-known Winchester rifle. It was not considered as adapted to use as a military weapon, as the danger of accidental discharge of a cartridge in the magazine column, increases materially with the heavy cartridges heretofore used in the military service.

The adoption of magazine guns brought increased expenditure of ammunition. Hence the necessity of carrying greater numbers by the soldier, which in turn required the lessening in weight of the powder, bullet, and case. To keep equal ballistic results, a new powder was invented, which, in addition to its smokelessness, has the more valuable quality of giving, with lower pressures, higher velocities to the projectiles. From this sequence has followed the adoption of new magazine guns of approximately .30 of an inch calibre, by the armies of all the principal powers, as shown in the table on the following page, from a publication of Capt. S. E. Blunt, Ordnance Dept., U. S. Army.

It will be noticed that in none of these guns is the magazine in the butt-stock, and it is in the tip-stock only in the Murata of Japan, the Kropatschek of Portugal, and the Lebel of France; the Norwegian rifle also is in this class. For descriptions and drawings of these rifles, see Report of the Chief of Ordnance, U. S. Army, for 1892.

The magazine rifle adopted 1893 for the U. S. regular army is .30 of an inch calibre. It is a modified Krag-Jorgensen, of the indirect or locking bolt action, differing materially from that used in Denmark. Its magazine holds five cartridges, charged through a horizontally hinged gate on the right side, from a sheet metal clip. The cartridges pass under the receiver and up the left side, where

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INFANTRY RIFLES OF DIFFERENT NATIONS.

Nation.	Name of gun.	Type.	Magazine	No. of cartridges in magazine.		Barrel.		Grooves.		Twist, inches.	Gun, lbs.	Weight.		100 cartridges, & issued, lbs.	Kind of powder.	Initial velocity.
						Length, inches.	Calibre, inches.	Depth, inches.	Width in terms of lands.			Bullet, grains.	Powder, grains.			
Argentina.....	Mauser '91	Repeater	Central	5	29.1	.301	4	.003	2½	9.84	8.8	211	41	6.30	Smokeless	2120
Austria.....	Mannlicher '88	Repeater	Central	5	30.1	.315	4	.008	1½	9.84	10.1	235	40	7.16	Schwab-Rubin (smokeless)	2080
Belgium.....	Mauser '89	Repeater	Central	5	30.7	.301	4	.003	2½	9.84	8.8	216	43	6.41	Wetteren (smokeless)	2170
Bulgaria.....	Mannlicher '88	Repeater	Central	5	30.1	.315	4	.008	1½	9.84	10.1	235	40	7.16	Smokeless	2060
Chili.....	Mannlicher '88	Repeater	Central	5	30.1	.315	4	.008	1½	9.84	10.1	235	40	7.16	Smokeless	2060
Denmark.....	Krag-Jorgensen '89	Cut-off	Central	5	32.9	.315	6	.006	2	11.81	9.5	235	76	7.00	Black	1770
England.....	Lee-Speed '91	Cut-off	Central	10	30.2	.303	7	.004	5	10.00	9.4	214	66	6.50	Black; Cordite (smokeless)	1830
France.....	Lebel '86	Cut-off	Tubular	8	31.5	.315	4	.006	2	9.49	9.3	231	46	6.15	Poudre B	2050
France.....	Berthier '91	Repeater	Central	4	29.1	.311	4	.005	3	9.45	8.5	205	33	6.30	Smokeless	2030
Germany.....	Model '88	Repeater	Central	5	31.1	.256	4	.006	(Nearly)	7.87	9.1	165	36	6.83	Nobel (smokeless)	2050
Holland.....	Mannlicher '92	Repeater	Central	5	28.8	.256	4	.006	(Equal)	7.87	8.5	170	34	5.43	Smokeless	2300
Italy.....	Carcano '92	Repeater	Central	5	29.6	.315	4	.004	(Equal)	11.00	9.0	238	36	6.00	Balistic (smokeless)	2320
Japan.....	Murata '87	Cut-off	Tubular	8	32.3	.315	4	.004	(Equal)	11.00	10.2	245	70	6.69	Smokeless	1850
Portugal.....	Kropatschek	Cut-off	Tubular	8	28.6	.256	4	.004	(Nearly)	7.87	8.7	165	36	7.70	Black	1760
Roumania.....	Mouzin '91	Repeater	Central	5	28.6	.256	4	.004	(Equal)	9.00	9.5	213	33	5.43	Smokeless	2260
Russia.....	Mouzin '91	Repeater	Central	5	30.0	.300	4	.004	(Equal)	9.00	9.5	213	33	6.12	Kazan-Factory (smokeless)	2100
Spain.....	Mauser '91	Cut-off	Central	5	30.7	.295	3	.004	(Nearly)	10.63	10.4	215	30	6.53	P. C. '89 (smokeless)	1920
Switzerland.....	Schmidt '89	Cut-off	Central	12	30.7	.295	3	.004	(Equal)	8.8	8.7	213	41	6.34	Smokeless	2110
Turkey.....	Mauser '90	Repeater	Central	5	28.4	.301	4	.004	3	10.00	8.7	220	37	5.86	Wetteren (smokeless)	2000
United States Army.....	Model '92, modified Krag-Jorgensen.	Cut-off	Central	5	30.0	.300	4	.004	3	10.00	8.7	220	37	5.86	Wetteren (smokeless)	2000

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they enter through an opening into the receiver, when the gun is used as a magazine arm. It may be employed as a single loader, by interposing the cut-off holding the 5 cartridges, as an emergency reserve, in the magazine. Its test showed that 38 rounds could be fired as a single loader, and 48 as a magazine gun, in two minutes. It is represented below.

Fig. 1

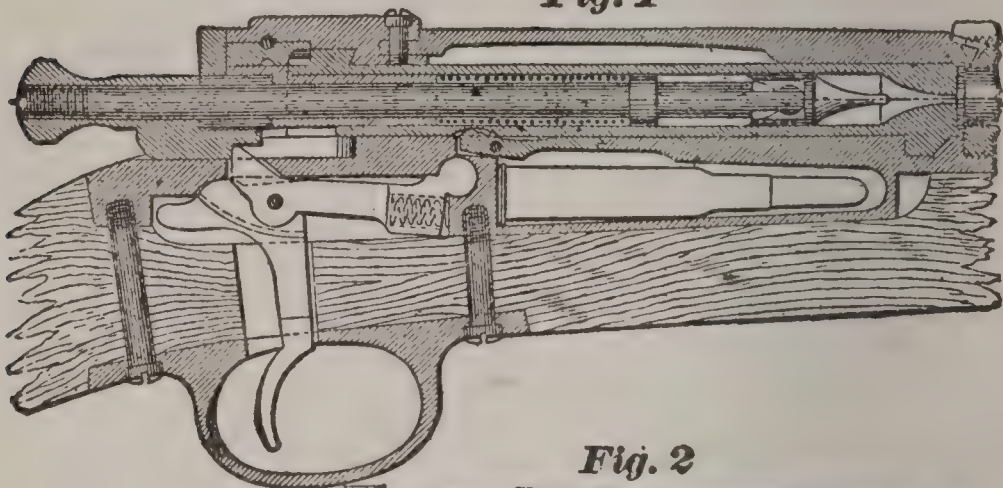


Fig. 2

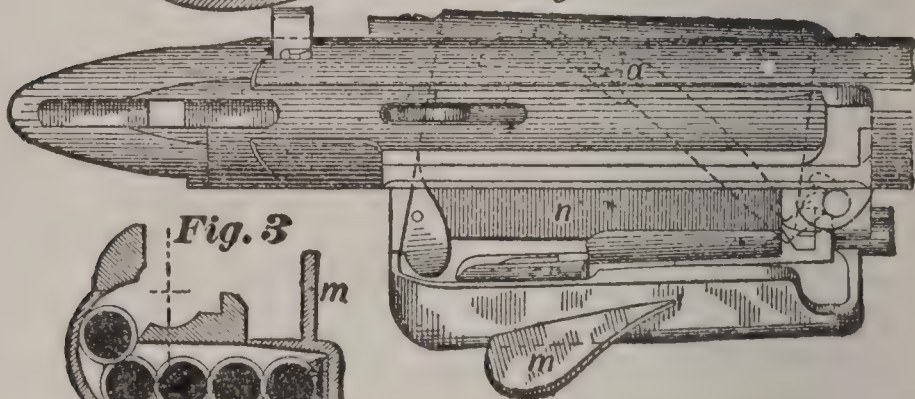
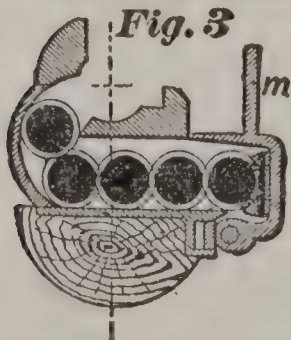


Fig. 3



Modified Krag-Jorgensen—U. S. Army—Model 1882.

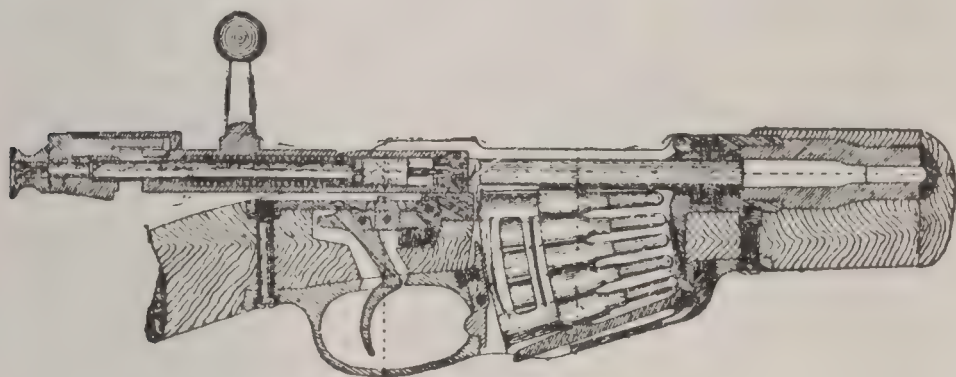
Fig. 1 shows a vertical longitudinal section, with bolt cocked. Fig. 2 shows a top plan view, with magazine gate open ready for insertion of cartridges through the opening *n*. The broken lines, *a*, indicate the position of the spring follower as the last cartridge is fed into the receiver—except that the gate would be closed. Fig. 3 shows the gate closed, giving a vertical cross section through the full magazine. The spoon follower and magazine spring are compressed against the gate.

The principal advantages of the central system of magazines are, that they are easily and quickly charged, simple of construction, safe during fire, constant in balance, light, and easily examined as to number of cartridges in maga-

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zine. The disadvantages attributed to the butt-stock and tip-stock magazines are, that the shock of recoil forces the bullet down on the powder, compressing it, which is specially dangerous with smokeless powder; slowness of charging the magazine with single cartridges; jamming of cartridges from too rapid or too slow motion of bolt; and irregularity of balance.

Central magazine systems are divided into two classes: (1) Those used as repeaters—not capable of being used as single loaders, until after the magazine is empty, or, if at all, only by using off the top cartridge and replacing it; (2) Those having a cut-off or stop such that the guns may be used as single loaders and the magazines called into play at any time. The first class is the quicker for a limited number of cartridges. In it the magazine is usually a separate piece, carried exposed on the body, of light metal, liable to be easily deformed, yet dependent on its correct shape to fit the magazine recess; it is therefore by many considered inferior to the cut-off system. Its best exemplar is the Mannlicher.



Mannlicher—1892.

The second class is well illustrated in the modified Krag-Jorgensen, above described.

BREECH-LOADING CANNON.—The distinguishing features in breech mechanism of cannon are: (1) The nature of the plug closing the breech; (2) The character of the gas check; (3) The means of manipulating the breech plug in opening or closing the breech; (4) The firing apparatus; (5) The locking device for securing the breech from moving during firing; (6) The safety device to prevent discharge prior to the breech being entirely closed; (7) For guns using metallic ammunition, the extractor.

There are two general systems of breech plugs for all modern cannon, except machine guns.—In one system there is a rectangular mortise cut through the body of the gun in rear of the powder chamber, into which is fitted a sliding or falling block slightly wedge shaped, capable of being so moved as to permit the charge to be entered through the prolongation of the bore. The best exemplar of the system is the Krupp (illustrated below), in

BREECH-LOADING GUNS.

which, by screw power, the block slides horizontally perpendicular to the axis of the bore.

Fig. 1.

Rear Elevation of the Breech.

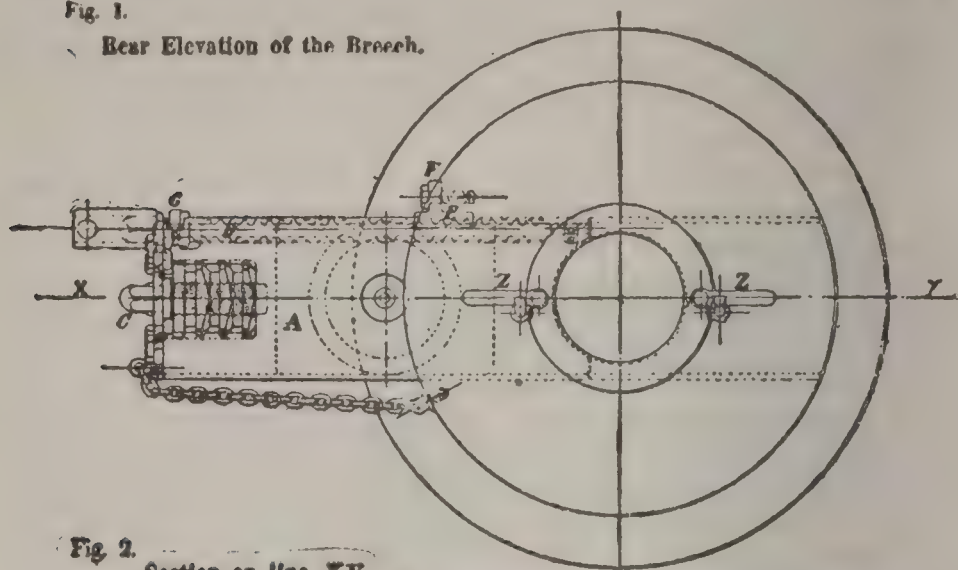
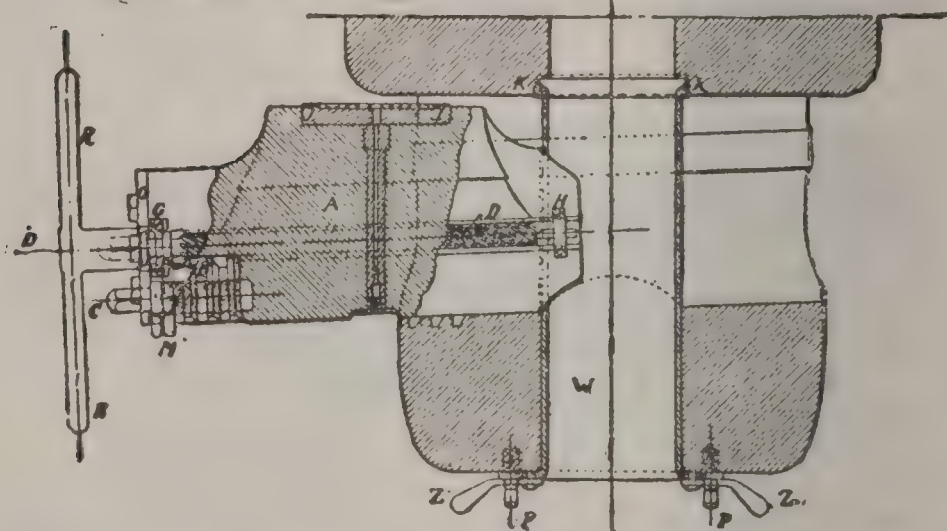


Fig. 2.

Section on line X-Y.



Krupp Breech-loading Mechanism.

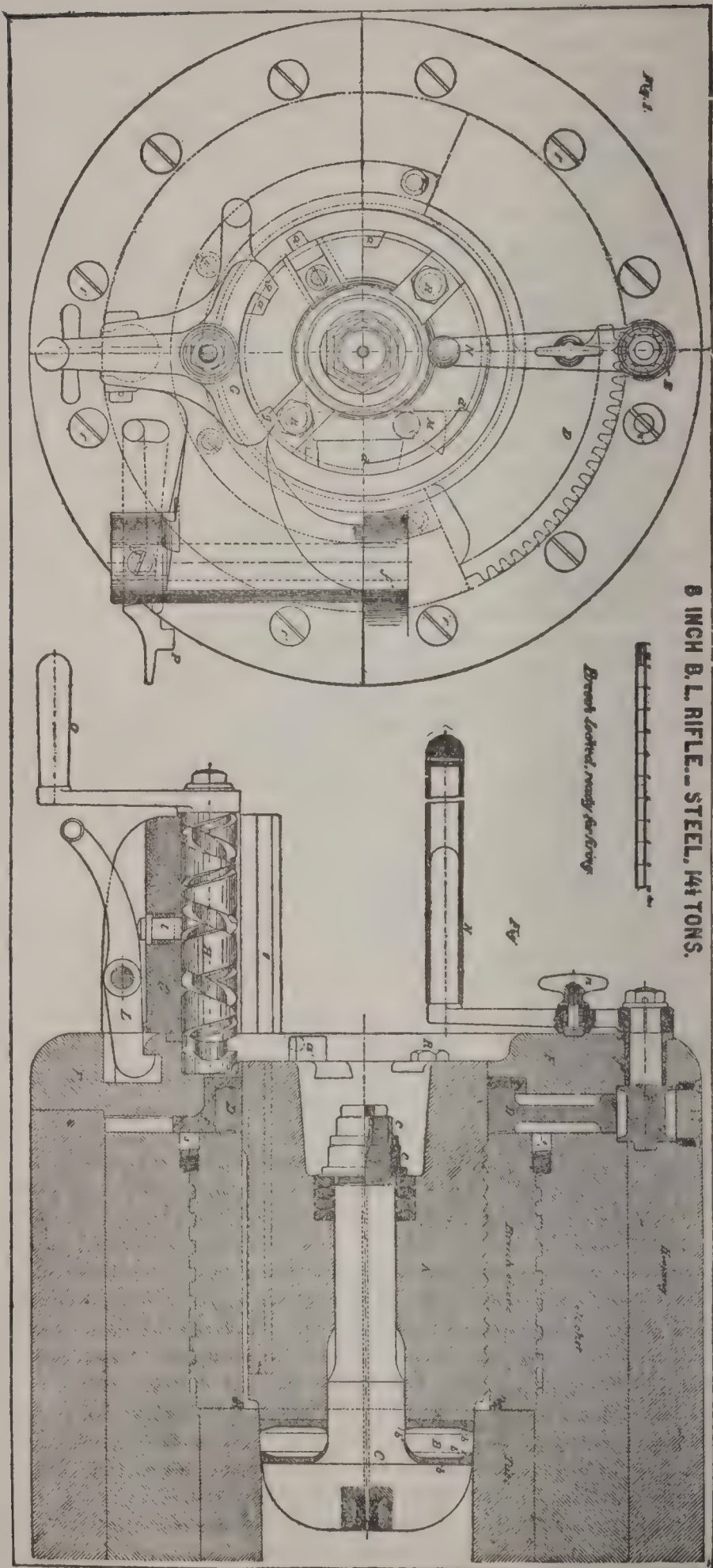
In it a mortise is cut horizontally through the breech of the gun in rear of the powder chamber. In this a cylindro-prismatic block, A, fits the mortise, so as to cover the bottom of the bore, and takes its bearing against the rounded rear surface. A horizontal traversing screw, D, mounted in journal bearings, G and H, in the block, takes in the half nut, E, bolted to the gun by F. When in place, the block is locked against lateral motion by the screw C, with a finer pitched thread. The screws C and D both are turned by a crank wrench, R. The gas check is a steel ring, K, lipped into the chamber and seated against a face plate, J. A sheet metal charging tray is slipped into the bore for protecting it in loading. The front face of the block is perpendicular to the axis of the gun—the rear face at a small angle thereto, so that in entering the block a slight wedging action is had. In some guns, on the top and bottom surfaces are ribs working in corresponding guide grooves, the bearing always against the rear surface.

In the other system the metal in rear of the powder chamber is continuous circumferentially, having a threaded

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surface into which is screwed a cylindrical or conical plug. This form is best known as the French slotted screw system, in which the screw box or body of the gun and the screw plug or breech block are threaded respectively with female and male threads, which equal alternate segments of approximately 45 or 60 deg. in each are slotted away to the bottom of the threads. In closing the breech, the block is so inserted that the threaded portion of block corresponds to the slotted, smooth part of the screw box; it is pushed forward its full length, and turned the eighth or sixth of a revolution, necessary to engage threads, giving same bearing surface as half the number of threads would, were such used, inasmuch as half the threads are slotted away. The system had its origin in six guns made in Boston for the British govt., 1855, for experimental purposes, after designs of Castmann. For lack of proper gas checks, the guns were never used. Subsequently in France breech blocks of the same general design were combined with adequate gas checks, founding what is known as the French system—well illustrated in the drawing of the U. S. army 8-inch breech-loading rifle on the following page and in the 12-in. breech-loading rifle Plate A. All service ordnance in the U. S., other than machine and rapid-fire guns, are of this system. The block is threaded, except a portion, at the rear, left full to keep out sand. Three segments are slotted away, to correspond to segments in the breech. Passing through the block is the spindle of the mushroom obturator, between whose rear face and the front face of the block, is placed the De Bange gas check, cups, and pad. Through the stem of the obturator is the vent, into which the electric or friction primer is screwed. The action of the firing sets back the mushroom against the plastic pad, effectually stopping the gas. To open the block, the upper crank lever handle is rotated. A pinion, mounted on its stud, takes in a gear segment of a collar passing about the block, and having shoulders bearing against corresponding ones in it. Thus the block is rotated through 60 degrees of arc, and the threaded portions are brought opposite the blanks in the screw box in the gun. Pivoted in two ears from the breech plate on the right hand side, is a hinge pin, supporting a bronze tray, intended to carry the block when withdrawn from the breech, and capable of being swung about the hinge so as to well clear the opening in the gun. In this tray is mounted a screw called the translating double thread, one right hand and one left. A stud fastened to and projecting below the rear face of the breech block, at the end of the unlocking revolution, enters left hand thread; the right hand thread takes in a corresponding one in the tray. The revolution of this roller gives to the block a motion equal to the sum of the two pitches. At the end of this motion the tray catch is automatically released, and the block and tray are swung to the right, about the vertical hinge pin, till the tray is caught and held by the second latch. A thin metal shot pan is placed

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BREECH-LOADING GUNS.

in the screw box to protect the threads, and the gun is loaded. A reverse operation closes the breech. It is illustrated on the following page.

Guns not using metallic ammunition require special means of closing the joint at the front of the block between it and the powder chamber, and the device is called a gas check. Two principal forms are now in use: (1) A metallic cup-shaped ring or combination of two metallic rings, acting by the elastic quality of the metal so as to set up against its seat by the pressure of the gas: it is generally known as a Broadwell ring, or Krupp gas check; (2) A plastic pad or mixture of asbestos and tallow enclosed in a canvas bag protected by metal. The pressure of the powder-gases squeezes this pad out against the wall of the gun and against the block, closing the joint: it is known as the De Bange gas check.

Breech-loading cannon may be classified according to their use, into Machine Guns, Rapid-Fire Guns, Mountain Artillery, Field and Siege Guns, and Heavy Ordnance; and according to their ammunition, into those in which the powder is loaded in a metallic case, which in itself constitutes the gas check, and those in which a serge or silk bag is used, the gas check being a part of the gun.

Machine guns are designed to use the same ammunition as small arms, though, owing to recent reductions of calibre in small arms, there are still in use those taking somewhat heavier ammunition. The principal machine guns are the Gatling, Gardner, and Maxim, of American invention; and the Nordenfelt, foreign.

The Gatling gun (q. v.), named from its American inventor, was one of the first machine guns; and, as perfected, is acknowledged to be the best. It consists of a system of barrels, usually 10, mounted on and parallel to a central axis, to which they are connected by front and rear plates—the system being rotated by a crank on this axis; cartridges are fed through a hopper in succession to the several barrels, fired and the cases extracted during each revolution of the system.—The Gardner gun has two or four parallel barrels mounted in a horizontal plane: the breech mechanism is in a compartment in rear of the barrels, and consists of alternating cams eccentrically mounted on a cross shaft giving a reciprocating motion to U-shaped pieces striding them: in the front arm of the U is the lock.—The Maxim gun has a single barrel capable of sliding under the action of recoil an inch to the rear, and is returned by a spring; extracts the cartridges, charges the chamber, cocks the lock, and fires the gun. After the first discharge, all the operations are automatically performed by the force of recoil.—In the Nordenfelt gun, the barrels are parallel to each other in a horizontal plane; the rotation of the crank causes cams to move a plate forward and back alternately supporting the cartridges, cocking and firing the different locks simultaneously and withdrawing the shells: the cartridges are fed through a hopper.

BREECH-LOADING GUNS.

Intermediate between machine guns and rapid-fire guns some nations use a heavier machine gun called a revolving cannon.

Rapid-fire guns are those firing fixed ammunition between 1.5 inches and 6 inches calibre. The cases are of drawn copper or brass—sometimes steel. The principal guns of this type are the Armstrong and Maxim-Nordenfelt of England; the Krupp and Gruson of Germany; the Canet, Schneider, and Hotchkiss of France; and the Dashiell and Driggs-Shroeder of the United States. The distinguished features are the breech mechanisms.—The Armstrong rapid fire gun is of the French or interrupted screw form of breech plug. The block is in shape a truncated cone, with two sets of helicoidal threads, arranged in two steps or cones, the top of the threads, in the front cone, being about a prolongation of the bottom or smooth portion, of the rear cone. The block is mounted in a carrier ring which swings about a vertical axis or hinge pin. By reason of its conical shape, it can be revolved about the hinge axis immediately on being unlocked by the rotation through 45 degrees. The power is applied by a lever handle, hinged in ears at top of the block.—The Maxim-Nordenfelt rapid-fire guns are of two distinct types: (1) The semi-automatic, in which a falling block of wedge shape is rotated down, uncovering the breech, by the counter recoil, where it is held open by lugs on the extractor: at the same time a heavy spring is compressed ready to close the breech when the cartridge is pushed in by hand—the head of the case freeing the extractor and allowing the block to rise; (2) A modified French slotted-screw system, in which the slotting is helicoidal—a stud in the carrier ring taking in a groove parallel to the slotting, so that a continuous motion of the handle rotates the block, withdraws it, unlatches the carrier ring, and swings block, extracting shell.—The Gruson rapid-fire gun has a falling block moved up and down in a vertical slot by a lever on a cross shaft mounted in the side walls of the breech: a stud in the left face limits the fall.—The Canet rapid-fire gun is of slotted screw system: the block is rotated, withdrawn and swung to one side by continuous motion of the lever handle, and a stud follows a cam groove so as to give the constrained motions.—The Schneider rapid-fire gun is of the usual slotted-screw breech system: a gear segment mounted on the hinge pin, takes in a rack on the side of the extractor bar, which slides in an under cut in the bottom segment.—The Dashiell rapid-fire gun has the slotted-screw block. A gear segment taking in a rack, in turn in gear teeth on the block, is mounted on the hinge pin: a continued motion of the crank mounted on the hinge pin, withdraws the block and rotates it. It is similar in principle to the Canet. See Plate B.

The *field*, *siege*, and *seacoast guns* of the United States have the breech closed by the slotted-screw system. The 8-inch seacoast gun is described above. The 10 and 12-inch guns have similar breech mechanisms, except that the power working the gear-segment to revolve the block is in-

BREED.

creased by introduction of additional gears. See Plates C and D.

In guns of smaller calibre than the 8-inch, the tray is replaced by a ring of steel, called a carrier, the translating roller is omitted, and the gear segment and actuating crank are replaced by a simple lever handle, suspended from ears at the top of the rear face of the block. A cam nose, extending from the upper or axial end of this lever, catches in a seat in the carrier ring, to prevent rotation when the lever handle is down. In this, as well as in the other service guns, an arm extends over the vent, automatically covering it, so that the primer for the ignition of the charge cannot be inserted until after the breech is closed and locked.

Many modifications of the French system for heavy guns have been proposed—the most promising being one known as the Farcot. In it a horizontal shaft mounted across the face of the breech, actuated by a crank lever, carries a worm, which takes in a gear mounted on a hinge pin, rotating it, and with it a pinion with diagonal teeth meshing into a circular rack on the end of the breech block, thus causing the latter to be unlocked, and later withdrawn by the same pinion engaging in a longitudinal rack in one segment of the block. The tray is automatically unlocked and swung about the hinge pin by the same motion, which is continuous; but the use of the worm causes great loss of power, through friction. There are many other breech mechanisms still in the experimental stage, among which the most promising are the Seabury and Gerdorn.

—See CANNON: GUN: GUNNERY: GUNPOWDER: ETC.—
For sporting guns (now almost universally breech-loading, but on a principle different from that in military small arms) see GUN.

BREED, *v.* *brēd* [AS. *bredan*, to nourish, to cherish: Dut. *broeden*, to hatch as eggs: Ger. *brüten*, to bring eggs or spawn into active life: W. *brwd*, hot, warm]: to bring animals into active life, as from seed, spawn, or eggs; to generate; to hatch; to produce young; to occasion; to educate; to train; to instruct; to raise from the best kinds: N. a race of men or other animals from one stock; a kind; a caste; offspring; a variety; a hatch, a brood. BREED'-ING, *imp.*: N. education; manners. BRED, *pp.* *brēd*. BREED'ER, *n.* one who raises a breed or kind; a prolific female. To BREED IN AND IN, to raise animals of the same stock from those that have already been raised or crossed. GOOD BREEDING, genteel deportment; the politeness resulting from culture and birth.—SYN. of 'breed, *v.*': to engender; procreate; propagate;—of 'breeding': nurture; training; manners; instruction; education.

BREED, in Domestic Animals: a variety, or often merely a race distinguished by the possession of particular qualities, but not differing from the ordinary type of the species so as to constitute what naturalists usually designate a variety. The peculiarities of breeds in animals have an exact counterpart in cultivated plants, the value of particular kinds often depending, in a great measure, upon

BREED.

characters scarcely capable of being defined in the language of scientific description, but to the production and perpetuation of which the attention of the cultivator cannot be too earnestly directed. These, also, in plants, as in animals, have of themselves little permanence, and the preservation or perpetuation of them depends upon the same assiduous attention and high cultivation from which, more frequently than from any mere accidental circumstances, they have originated. Thus it happens that the most improved varieties of garden-plants usually degenerate even under ordinary horticultural treatment, and the choice pansies of the florist lose their characteristic excellences if a place is simply assigned to them in a common flower-border. To the breeding of the most valuable domestic animals, great attention has of late been paid—probably more since the beginning of the 19th c. than in all the previous history of the world—and with results the magnitude of which may in some measure be estimated from the statement on competent authority, that in the second 30 years of this century the weight of mutton produced was about doubled in proportion to the number of sheep kept. To the improvement of the B. of horses, attention has been paid for a much longer time than to that of oxen and sheep; and to this must, in a great measure, be ascribed the difference excellences of some of the well-known breeds employed for very different purposes. The use of the horse in war, and for purposes of pomp and luxury, appears to have been the reason of the higher degree of attention thus given it, even from ancient times. The Arabs have long been particularly careful of the B. of their horses, and diligently preserve a record of their pedigree. What is called *blood* in horses, however, only fits them in a higher degree for certain purposes; and with regard to this as to other animals, the judgment of the breeder must be exercised as the perpetuation, increase, or combination of particular qualities may be the object which he has in view. Fleetness and strength are important qualities in horses, the extremes of which never co-exist in the same animal, but of which a certain combination is for some purposes very desirable; and either of these may be displayed in a great degree without much *bottom*, or power of enduring continued severe exertion—a quality of very high value. The properties most desired in sheep and oxen are very different from those most highly esteemed in the horse—the fleece and the flesh being chiefly regarded in sheep, the flesh and the milk in oxen. Sometimes a perpetuation of good qualities is the great object of the breeder, and a combination of them in the highest possible degree is aimed at; sometimes, the production of the largest possible quantity of beef or mutton in the shortest time being almost exclusively designed, the breeder neglects considerations which would be of importance if his stock could not be improved by animals obtained from other quarters. Extraordinary differences are certainly found among animals of the same species in the readiness with which they convert food into flesh and

BREEDÉ.

fat, and in the age at which they are fit for the hands of the butcher. One effect of the attention bestowed of late upon the breeding of stock, has been to supply the market, to a great extent, with the flesh of younger animals than could previously be sent to it—a change evidently tending not only to the benefit of the farmer, but to the increase of the national wealth; because the land, even without increased produce of grass, sends a greater amount of beef and mutton to market within the same term of years. Those sheep and oxen which exhibit in the highest degree the qualities just referred to, are characterized by shortness of legs, smallness of bones, smallness of head, and fineness of skin; qualities the opposite of those which would fit the animal for a wild state and an independent existence. For the most important breeds of domestic animals, see their titles.

As to the rules and physiological principles of breeding, it may be said that the principles, so far as application of them has yet been found practicable, are only the best known principles of physiology (q.v.), while the rules which guide the breeding of stock have mostly been learned by experience, and are to be regarded rather as contributions to science than as deductions from it. The probable relative influence of the male and female parent upon their progeny, is a point unquestionably of the greatest importance, but concerning which widely different opinions have been maintained; and another much controverted and important point is, the propriety of *breeding in and in*. Practically, the rule is always observed by those who seek the improvement of a *breed*, of selecting the very finest animals possible, both male and female; although a great improvement of the existing stock on a farm is often effected in the most advantageous manner by the mere introduction of males of better quality. The dangers of breeding *in and in* are very generally acknowledged, even while it is contended that they may very much be obviated by careful rejection of every faulty animal, and that in this way the utmost advantage may be taken of the very highest improvements; but it is likewise generally admitted that, if equally improved individuals can be obtained not so nearly related, it is better to seek the perpetuation of the B. by their means. It is a rule also of much practical importance, that an improvement of B. is to be attained not by a *cross* between animals of very different breeds, as between a dray-horse and a race-horse, but only between those which are comparatively similar. The result of the intermixture of very *dissimilar* breeds is never in any respect satisfactory.

BREEDÉ, *brā'dēh* or *brēd*: river in Cape Colony, flowing chiefly through the dist. of Zwellendam, which contains Cape Agulhas, the most southerly point of Africa. It rises in the Warm-Bokkeveld, a mountain-basin about lat. 33° 10' s., long, 19° 30' e., running first w., and afterward s.e.; and it enters St. Sebastian's Bay or Port Beaufort, from which, upward, it is navigable 40 m. Its exports are wool, aloes, skins, feathers, grain, butter, cattle, mules, etc.

BREEKS—BREHON.

BREEKS, n. plu. *brēks* [Icel. *brók*]: in *Scot.*, breeches; trousers: see **BREECH** 1.

BREESE, n. *brēz*: see **BREEZE** 2.

BREESE, *brēz*, **SIDNEY**: 1800–1878; b. Whitesboor, N. Y.: jurist. Having graduated at Union college, 1818, he removed to Illinois, where he was state attorney 1822–27, and then U. S. attorney for Illinois. In 1841 he was elected judge of the supreme court. He was U. S. senator 1843–49. As chairman of the senate committee on public lands he reported in favor of a transcontinental railroad. During the last five years of his life he was chief justice of the supreme court of Ill. He published *Origin and History of the Pacific Railroad*.

BREEZE, n. *brēz* [F. *brise*, a cool wind: It. *brezza*, chill-ness or shivering, a cold wind: imitative of a rustling noise]: a soft blowing wind; a gentle gale (see **WIND**): V. to blow gently. **BREEZY**, a. *brēzī*, subject to frequent breezes. **BREEZE'LESS**, a. **SEA'-BREEZE**, the wind or breeze blowing from the sea. **LAND'-BREEZE**, the wind or breeze blowing from the land toward the sea. — **SYN.** of 'breeze, n.': wind; blast; gale; gust; storm; tempest; hurricane.

BREEZE, n. *brēz* [AS. *briosa*, and *brimsa*; Ger. *bremse*, a gad-fly: Ger. *brummen*; Fris. *brimme*, to hum]: a gad-fly; a stinging fly; also spelled **BRIZE**, **BREESE**.

BREEZE, n. *brēz* [F. *bris* or *débris*, rubbish: Ger. *brosame*, a crumb: Gael. *bris*, to break]: dust; rubbish; ashes and cinders used in brick-making; refuse coal; also spelled **BRISS**, **BRIST**.

BREGENZ, *brā'ghēnts*: frontier town of Austria, cap. of the dist. of Vorarlberg; at the mouth of the small river B. which here flows into the Lake of Constance, between the Swiss and Bavarian territories, about 80 m. w.n.w. of Innsprück. From the ruins of the castle of Hohenbregenz, on a hill near the town, a very beautiful prospect is obtained of the lake and its surrounding vineyards, etc. B. is one of the oldest towns, and was formerly one of the chief fortified places in the s. part of Germany. The inhabitants are engaged in agriculture, horticulture, and cattle-keeping. Cotton-spinning and weaving also are carried on; and articles of wood, gold, and iron are manufactured. Its position secures B. a large transit-trade in the produce of the district. In the neighborhood lies the mountain-pass, the *Bregenzer-Klause*, formerly a strong military position between Swabia and the Tyrol. During the Thirty Years' War, the Swedes, 1646, stormed and captured the fortress of B., and destroyed the works in the pass. Pop. of B. (1880) 4,736; (1890) 6,739.

BREGMA, n. *brēg'mă* [Gr. *bregma*, the fore-upper-part of the head—from *brecho*, I moisten or wet]: the top of the head; the two spaces in the infant's head where the part of the bone is the longest in hardening.

BREHON, n. *brē'ôn* [Ir. *breathamh*; Gael. *breith*, judgment]: a judge: **ADJ.** a term used in ancient times to design-

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nate the common (and probably at first unwritten) laws of Ireland. BREHON LAWS, the system of jurisprudence which prevailed among the native Irish from an early period till toward the middle of the 17th c. The *breitheamhuin* (pronounced *brei-hoo-in*, or *brehon*), from whom the laws had their name, were hereditary judges, who administered justice among the members of their tribe, seated in the open air, upon a few sods, on a hill or rising ground. The poet Spenser, in his *View of the State of Ireland*, 1596, describes the Brehon laws as 'a rule of right unwritten, but delivered by tradition from one to another, in which oftentimes there appeareth great share of equity, in determining the right between party and party, but in many things repugning quite both to God's law and man's: as, for example, in the case of murder, the brehon—that is, their judge—will compound between the murderer and the friends of the party murdered, which prosecute the action, that the malefactor shall give unto them, or to the child or wife of him that is slain, a recompense, which they call an *eric*: by which vilo law of theirs many murders amongst them are made up and smothered: and this judge being, as he is called, the lord's brehon, adjudgeth for the most part a better share unto his lord, that is, the lord of the soil, or head of the sept, and also unto himself for his judgment, a greater portion than unto the plaintiffs or parties grieved.' Spenser seems not to have known that pecuniary compensation for manslaughter had obtained in the ancient laws as well of England as of most European nations. He was incorrect, too, in believing that the Brehon laws was an unwritten code. Many manuscript collections of the Brehon laws still exist in public and private libraries in Ireland, England, and Belgium. These manuscripts are regarded as varying in date from the early part of the 14th to the close of the 16th c. For the laws themselves a much higher antiquity is claimed. 'So far as we have external evidence to guide us,' says Dr. J. H. Todd and Dr. C. Graves, two eminent Irish antiquaries, 'there is no reason to suspect that the Brehon laws have undergone any material change since the time of Cormac Mac Cuilleain, king and bishop of Cashel, who died A.D. 908. He was a man of great learning and energy, who certainly promoted the execution of considerable literary works, and under whose influence it is not improbable that a systematic compilation of the laws may have been effected. Of this, however, we have no distinct record. On the other hand, we find scattered through all parts of the laws allusions to a general revision of them made in the 5th c., at the instance of St. Patrick, who, in conjunction with certain kings and learned men, is said to have expunged from them all those institutions which savored of paganism, and to have framed the code called the *Seanchus Mor*. These same documents assert the existence of still more ancient written laws, the greater part of which are ascribed to Cormac Mac Art, monarch of Ireland, in the middle of the 3d c. However slow we may be to acquiesce in statements of this kind, which contradict what we have learned

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concerning the progress of legislation in the remaining parts of western Europe, we may readily admit that the subject-matter of many of the laws demonstrates their great antiquity, as it indicates the primitive nature of the society in which they prevailed. In spite of the attempts to efface it, traces of heathenism are still discernible in many parts of them. They enumerate various ordeals of a pagan character, which are expressly termed *magical*, and specify the occasions on which a resort to them was prescribed. There are also provisions in the laws of marriage which prove that Christianity could have exercised but a feeble influence at the time when they were enacted. The language in which the Brehon laws are written is a convincing proof of their antiquity. They are not composed of a peculiar dialect, as many writers have maintained; but if their style differs from that of the vernacular Irish of the present day, as Anglo-Saxon does from modern English, this dissimilarity is to be ascribed mainly to the effects of time, by which the orthography and grammatical forms of the language have been modified, and legal terms and phrases of constant recurrence have become obsolete.' The world of letters will be able in no long time, to judge for itself on the opinions thus expressed. It is now upward of 30 years since the publication of the Brehon laws, at the charge of the Irish government, was strongly urged by such men as Guizot, Grimm, and Ranke abroad, and Hallam, Macaulay, and Earl Stanhop in England. A commission was accordingly appointed by the Earl of Eglinton, 1852, 'to direct, superintend, and carry into effect the transcription and translation of the ancient laws of Ireland, and the preparation of the same for publication.' The commissioners entrusted the transcription and translation of the Brehon laws to the two most eminent of Irish scholars—the late Dr. John O'Donovan, prof. of Celtic in the Queen's College at Belfast; and the late Eugene O'Curry, prof. of Irish archeology in the Rom. Cath. Univ. of Ireland. These gentlemen having finished their task, the editorship of the work was entrusted to Mr. W. J. Hancock, late prof. of political economy in Trinity College, Dublin, and the Rev. Thaddeus O'Mahony, prof. of Irish in the Univ. of Dublin. The publication, it is reckoned, will extend to eight vols. of about 550 pages each. Three of these have already appeared—the last in 1873—under the title of *Ancient Laws and Institutes of Ireland*. With the Irish text an English translation is given, accompanied with preliminary dissertations, glossaries, and indexes, and they give a vivid and characteristic picture of the polity and social life of a Celtic people. A fac-simile reprint of the Brehon laws has recently been published in 17 vols. by the Brehon Laws Commission.

BREISACH, ALT, *ält brī-zāk'*: very old town of the grand duchy of Baden, on an isolated basalt hill on the right side of the Rhine, about 12 m. w. of Freiburg. As early as the time of Julius Cæsar, *Mons Brisiacus* was known as a strong military position, and was taken by Ariovistus when he

BREITENFELD—BREMEN.

invaded Gaul. Being regarded as the key to the w. of Germany, it was a prominent scene of action during the Thirty Years' War at the conclusion of which it was ceded to the French. During the next c., it frequently changed masters, now belonging to France, and now to Austria. The French destroyed its fortifications 1744, and during the war of the Revolution, 1793, part of the town was burned by them. In 1806, the French yielded it to the House of Baden. The minster of St. Stephen is a venerable structure in good preservation, and contains several old monuments. Pop. about 3,800.

BREITENFELD, *brī'tn-fēlt*: village and manor of Saxony, about 5 m. n. of Leipsic; historically remarkable for three battles on a plain in its neighborhood. The first between the Swedes and the Imperialists, 1631, Sept. 7, was of the highest importance to Europe, as it secured the permanency of Protestantism and the freedom of Germany. Tilly's pride had reached its highest point after the fall of Magdeburg, 1631, May 10; and in the early part of Sep. he advanced against the Saxons, with an army of about 40,000 men, for the purpose of forcing the elector, John George I. (who would not submit to the edict of restitution, and was treating with the Swedish king, Gustavus Adolphus), into an alliance with the emperor. No other way remained than for the elector to join the Swedish king, who had just entered Pomerania. Gustavus Adolphus, joined by the Saxons, advanced toward Leipsic, where Tilly lay, who advanced into the plain of B. The imperial forces were completely defeated, and their three most distinguished generals, Tilly, Pappenheim, and Fürstenberg, wounded. The second battle at B., a second triumph of Swedish valor, 1642, Oct. 23, was between the Swedes, headed by Torstenson, one of the pupils of Gustavus, who had invested Leipsic, and the Archduke Leopold, with General Piccolomini, who was advancing from Dresden to its relief. The Swedes gained a complete victory over the Imperialists, who fled into Bohemia, leaving behind them 46 cannon, 121 flags, 69 standards, and the whole of their baggage. The third battle at B., 1813, Oct. 16, was part of the great contest known as the battle of Leipsic.

BREITHAUPTITE, n. *brī'thōp-tīt*, [after Professor *Breithaupt*]: antimonial nickel of a light copper-red with a violet-blue tarnish.

BREME, a. *brēm* [AS. *brēman*; Ger. *brummen*, to be furious: L., *frēmērē*; It. *bramire*, to growl, to rage]: in Scot. and OE., fierce; furious; sharp; severe. **BREME'-sow**, a breeding sow, furious or in heat; also **BRIM**.

BREMEN, *brēm'ën*, Ger. *brā'mén*: one of the three free cities of Germany, on the Weser, about 50 m. from its mouth. Pop. (1900) 224,882; nearly all Protestants. B. is divided into the Old and the New Town—the former on the right, the latter on the left side of the river, which is spanned by four bridges. The ramparts and bastions round the old town have been levelled and formed into public promenades. Among principal build-

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ings, the Cathedral (built about 1160), the Gothic Town-hall (begun about 1405), with its famous wine cellar, said to contain hock of the vintage of 1624, the Exchange, the Museum, the Post-office, and the Observatory of Dr. Olbers, from which he discovered the planets Pallas and Vesta, are remarkable. The position of B. makes it the emporium of Brunswick, Hesse, and other countries through which the Weser flows. Besides its excellent water-communication, it is connected by railways with the whole of western and central Germany. B. is an exceedingly thriving place, its trade having more than doubled within the last ten years. Large vessels stop at Bremerhaven, where there is a spacious harbor constructed, about 38 m. below B., with which it is connected by electric telegraph. Vessels not drawing more than 7 ft. of water can come up to the town itself. B. carries on an extensive commerce with the United States, the West Indies, Africa, the East Indies, China, and Australia. Its great trade, however, is with the United States, from which alone, in a single year, it imported produce of the estimated value of \$45,000,000, exporting in return goods to the value of \$24,000,000. With the exception of Hamburg, no continental port ships so many emigrants to the United States as B., through its main port at Bremerhaven. The total number of vessels arriving at B. 1900 was about 3,500, with a tonnage of about 2,200,000 tons; the tonnage cleared was rather smaller. The number of ships belonging to the port 1901 was 600, with a burden of 634,726 tons. In 1901 the value of the imports amounted to \$266,750,000, exports to \$251,200,000, whereas in 1858, the imports were valued at only \$41,185,000, and the exports at about \$40,000,000. The chief imports are tobacco, coffee, sugar, cotton, rice, skins, dye-woods, wines, timber, hemp, etc. The exports are woolen goods, linens, glass, rags, wool, hems, hides, oil-cake, wooden-toys, etc. Large quantities of tobacco are re-exported. B. has manufactures of woolens and cottons, cigars, paper, and starch, and extensive ship-building yards, breweries, distilleries, and sugar refineries. The cigar and sugar manufactures have of late declined, the former on account of increase of duty. In 1872, 2,500 hands were engaged in making cigars. Steam communication with N. Y., Hull, Havana, the n. coast of S. America, etc.

B. first became of historical note in the 8th c., when it was erected into a bishopric by Charlemagne. It soon attained considerable commercial importance, and became one of the principal cities of the Hanseatic League (q.v.). Having frequently suffered at the hands of the French, it was, 1810, incorporated with that empire; but it recovered its independence 1813, and by the Congress of Vienna was admitted 1815, as one of the Hanse towns, into the Germanic confederation. In 1867, it became a member of the N. German confederation, and now forms part of the German empire. The area is about 100 sq. m. The government is intrusted to a senate of 18 members, two of whom are chosen burgomasters, and to a municipal council of

BREMER—BRENNER PASS.

150 burgesses.

BREMERHAVEN, a port on the Weser, nearly 10 m. from its mouth, was founded by Bremen 1827, on ground acquired from Hanover, and soon became a thriving place. It has extensive docks and quays, and is the seaport of Bremen. Pop. over 20,000.

BREMER, *brē'mér*, **FREDRIKA**: 1801, Aug. 17—1865; b. Abo, Finland: Swedish novelist. Her family removed to Sweden when she was only three years old. As a child of eight years she had already begun to write verses; and the works of German poets, Schiller especially, exercised great influence over her youthful imagination. Her original novels first made their appearance under the general title *Tekningar ur Hvardagslivet*, Stockholm, 1835. It was not, however, till 1842 that the English and American public hailed with delight the appearance, in an English dress, of *The Neighbors*, perhaps the most universally popular of all Fredrika B.'s charming pictures of domestic life in Sweden. Encouraged by its enthusiastic reception, Mrs. Howitt subsequently produced translations of *The Diary*, *The H. Family*, *The President's Daughters*, *Brothers and Sisters*, *Life in Dalecarlia*, and *The Midnight Sun*. In 1849, Miss B. visited the United States, and spent two years, passing some time in England on her return. In her *Homes of the New World*, published simultaneously in England, America, and Sweden, 1853, she presents exquisite descriptions of scenery, and vivid pictures of social life, with sound and comprehensive views on political and moral subjects. Returning to her home in Sweden, and saddened by the death of a beloved sister, Miss B. devoted her talents and energies to certain philanthropic objects, in which she had throughout life felt deep interest, especially the education of the poorest classes. As a writer of fiction, she is distinguished for feminine delicacy, shrewd sense, humor, deep knowledge of human nature, and a graphic and forcible style. Her works have been translated into almost all the languages of Europe. Her Life and unpublished writings were issued by her sister, 1868.

BREN, v. *brĕn* [AS. *brennan*, to burn: Icel. *brandr*, a burning fragment (see **BRAND**)]: in *OE.*, to burn. **BRENNING**, imp. **BRENT**, pp. and pt. burnt.

BRENNHAM, *brĕn'am*: flourishing town, cap. of Washington co., Tex.; 126 m. n.w. of Galveston, 93 m. e. of Austin, and about 10 m. w. of the Brazos river, at the intersection of the Gulf Colorado and Santa Fé with the Houston and Texas Central railroad. The region is fertile, well suited to the growth of cotton, of which large quantities are shipped here. B. has the Live-Oak Female Sem., an opera house, 8 churches, 3 banks, 1 daily and 3 weekly newspapers, a planing-mill, several carriage-shops, and various other manufactures. Pop. (1870) 2,221; (1880) 4,101; (1890) 5,209; (1900) 5,968.

BRENNER PASS: pass in the main chain of the Alps,

BRENNUS.

on the road between Innsbruck (q.v.) on the n. and Botzen (q.v.) on the s., connecting the s. of Germany with Venice and the n.e. of Italy. The B. P. is the lowest which crosses the main chain of the Alps, the summit being only 4,775 ft. above the sea. Lofty mountains rise above it to the further height of more than 7,500 ft., yet the scenery of the pass is less sublime and less interesting than that of any other of the great passes of the Alps. It is open at all seasons of the year. At the summit of the pass is the village of Brenner a resting-place for travellers; pop. about 400. The climate here is so severe that grain seldom ripens. Here the traveller finds in close contiguity the Eisach, a small stream, which, after growing to be a considerable river, joins the Adige and the Sill, a tributary of the Inn, one stream flowing to the Gulf of Venice, the other into the Black Sea. A railway through the B. P. was opened 1867, Aug. 18, thus establishing a complete railway line between Germany and Italy. This work was begun by the Austrian government when Venetia belonged to the Austrian empire. The distance from Innsbruck to Botzen in a direct line is only 52 m., but is much longer by the road or the railway.

BRENNUS, *brĕn'us*: name, or rather title of several Gallic princes; probably a Latinized form of the Kymric word *Brenhin*, which signifies a king.

The most famous BRENNUS was that leader of the Gauls who, B.C. 390, crossed the Apennines, and hurrying through the country of the Sabines, at the head of 70,000 men, encountered and overthrew on the banks of the Allia (q.v.) the Roman army. Had the barbarians immediately followed up their advantage, Rome might have been obliterated from the earth; but instead of doing so, they abandoned themselves to drunken delights on the battlefield, and gave the Romans time to fortify the Capitol, whither were removed all the treasures and holy things of the city. When B. entered the gates, he found that all the inhabitants had fled, with the exception of the women, children, and old men, the last of whom, with pathetic heroism, had resolved not to survive the destruction of their homes, and so, the chief among them, clothed in their robes of sacerdotal or consular dignity, and sitting in the curule chairs, waited the approach of their enemies, and received their death in majestic silence. B., having plundered the city, now besieged the Capitol for six months. During the beleaguering occurred the famous night-attack, which would have been successful had not the cackling of the geese, kept in Juno's temple, awakened the garrison. At length, however, the Romans were compelled to enter into negotiations with the besiegers. They offered 1,000 lbs. of gold for their ransom, which was agreed to. According to Polybius, B., and his Gauls returned home in safety with their booty; but the rather mythical Roman traditions affirm that, just as the Gauls were leaving the city, Camillus, who had been recalled from banishment, and appointed dictator, appeared at the head of an army, attacked them, and, in

BRENTA—BRENTANO.

two bloody battles, slew the whole of the barbarians to a man.

Another BRENNUS, conspicuous in history, was that Gallic chief who invaded Greece, B.C. 279, at the head of 150,000 foot and 61,000 horse. After desolating Macedonia, B. forced his way through Thessaly to Thermopylæ. The Grecian army fled at his approach. B. now rushed on with a division of his great host to Delphi, which he had resolved to plunder, but the Delphians, having taken up a very advantageous position on some rocks, resisted his further progress. Assisted by the terrors of an earthquake and a terrible storm, besides, according to reverential tradition, by the supernatural help of Apollo, they utterly routed the Gauls, who fled in dismay. B. was taken prisoner, and drank himself to death in despair.

BRENT, CHARLES HENRY, an American clergyman; b. 1862, in Newcastle, Ontario; educated at Trinity College School at Port Hope and at Univ. of Trinity College, Toronto; ordained in Prot. Episc. Church 1887. His first clerical work was at St. Paul's Pro-Cathedral, Buffalo; later went to High Church Parish of St. John the Evangelist, Boston, under Father Hall. When the latter was elevated to the bishopric in 1891 B. was transferred to St. Stephen's Church, where he labored among the poor. In 1901, Oct., he was nominated missionary bishop of the Philippines, and Dec. 19 following was consecrated. He was given \$100,000 to erect a cathedral, school and Bishop's house in Manila.

BRENTANO, brĕn-tā-nō, CLEMENS: 1778-1842, July 28, b. Frankfort-on-the-Main: novelist and dramatic poet; brother of Goethe's 'Bettina.' He studied at Jena; afterwards resided successively at Frankfort, Heidelberg, Vienna, and Berlin. In 1818, through a morbid discontent with himself and his fellow-men, he retired to the cloister at Dülmen, in Münster. Latterly, he resided at Regensburg, Munich, and Frankfort-on-the-Main, where he led the life of a recluse, and gained considerable reputation for sarcastic wit. He died at Aschaffenburg. In his earliest poems the peculiarities of the 'romantic school' of his time are carried to excess. His dramatic productions, such as *The Merry Musicians*, a *Musical Drama* (Frankfort, 1803), in which there are some gems of lyric poetry, *Ponce de Leon* (Göttingen, 1804), etc., are characterized by great dramatic power, amusing though rather far-fetched wit, and a wonderful flow of humor. Perhaps his most successful piece as a drama is *The Founding of Prague* (Pesth, 1816). B. was most successful in his smaller novels, particularly in the *History of Casper the Brave and the Fair Annerl* (2d ed. Berlin, 1831), which German critics call a 'chef-d'œuvre in miniature.' His last work, the legend of *Gokel, Hinkel, and Gakeleia* (Frankfort, 1838), was intended as a satire upon the times in which he lived. He has received the grateful acknowledgement of his countrymen for his renovation of the good old history of George Wickram of Kolmar, which he published under the title of *The Thread of Gold* (*Der Goldfaden*, Heidelb., 1809).

BRENTFORD—BRESCIA.

BRENTFORD, *brěnt'furd*: co. town of Middlesex, Eng., on both sides of the Brent, at its confluence with the Thames, 7 m. w.s.w. of London, and where the Thames is crossed by a bridge leading to Kew. It consists chiefly of one long irregular street. It has large gin-distilleries, a soap-work, and the works of the West London Water company. There are many market-gardens in the vicinity. Here Ironside defeated the Danes 1016, after expelling them from London; six martyrs were burned at the stake, 1558; the Royalists under Rupert defeated the Parliamentarians under Colonel Hollis, 1642. Pop. (1891) 13,736.

BRENT-GOOSE, n. *brěnt'gós* [Icel. *brandgás*, a brent-goose: comp. Ger. *halber ente*, a half-duck]: sometimes called **BRENT BARNACLE**, a migratory sea-bird; the smallest species of geese: see under **BARNACLE GOOSE**.

BRESCIA, *brěsh'ē-a*, or *brěsh'á*, or **BRESCIANO**: province in Lombardy, Italy, bounded by Lago di Garda on the e., and separated from Austria on the n. by the Tyrol Mountains; 1,784 sq. m. A chain of the Rhetian Alps occupies the n. part; but about two-thirds of the province lies in the fertile and beautiful plain of the Po. It is drained by the Olio, the Mella, and the Chiese rivers, three tributaries of the Po. The vegetable products are grapes, olives, corn, flax, and hemp. Copper, iron, granite, marble, and alabaster, are obtained from the mountains. There are manufactures of copper, iron, steel, glass, wool, silk, cotton, and paper. The principal towns are Brescia, the capital, Chiari, Monte-Chiaro, Pontevico, Orzinovoa, Salò, and Rovato. Pop. (1901) 538,427.

BRESCIA, *brěsh'ē-a*: city of Italy, capital of the province of B., in Lombardy, about 60 m. e.n.e. of Milan. It is romantically situated on the rivers Mella and Garza, in a wide, fertile plain, at the base of several hills. The railway from Milan to Venice passes through Brescia. The city is for the most part regularly built, and, besides two cathedrals, the old and the new, it has numerous ancient churches, adorned with pictures and frescoes, including many by masters of the Venetian school. Several interesting antiquities have been discovered. It has a valuable public library, the *Biblioteca Quiriniana*, founded and nobly endowed about 1750, by Cardinal Quirini, a munificent encourager of literature. It contains upward of 30,000 vols., with many rare manuscripts. B. has manufactures of woollens, silk, leather, paper, etc., and its wine is of good quality. The old name of B. was *Brixia*, and its inhabitants were allied with the Romans when Hannibal crossed the Alps. It was captured by the Huns during their migrations, and afterward passed through the hands of the Longobards, Charlemagne, the Franks, and the Germans. It was taken by the French under Gaston de Feix, 1512, when it is stated that more than 40,000 of the inhabitants were massacred. The city never fully recovered from the effects of that inhuman sack and pillage. In March 1849, B., as the only important town opposed to Austrian rule in

BRESLAU—BREST.

Lombardy, was besieged by Haynau, and forced to capitulate. Pop. (1901) 70,614.

BRESLAU, *brěs'low*: capital of the province of Silesia, Prussia, at the confluence of the Ohlau and Oder; next to Berlin the most populous city in Prussia. More than half the people are Protestants. The Oder divides it into two parts, connected by numerous handsome bridges. The fortifications have been converted into beautiful promenades, and the ditch has been transformed into an ornamental sheet of water. The streets of the new portion of B. are spacious and regular, and the houses stately and handsome, a pleasant contrast to the sombre, massive structures of the old town. Educational institutions are numerous, including a university founded by the Emperor Leopold I., 1702, and now accomodating 900-1,000 students. The library contains 300,000 vols. B. has many churches, the most remarkable being the Protestant church dedicated to St. Elizabeth, with a steeple 298 ft. in height (the highest in Prussia), and a splendid organ. The situation of B., in the centre of the manufacturing districts of the province, secures it a large trade, which its railway connection with all the important cities on every side, in addition to the facilities of communication which the Oder affords, enables it to turn to the best account. It has manufactures of linen, woolens, cotton, silks, lace, jewelry, machines, earthenware, soap, alum, starch, etc., and upward of 100 distilleries; and a trade in grain, coal, metals, timber, hemp, and flax. B. is a city of Slavonic origin, and was for many centuries occupied alternately by the Poles and the Bohemians. It afterward passed to Austria, from which it was taken by Frederick II. of Prussia, 1741. Six years afterward, it was captured by the Austrians, after a bloody battle, but retaken by Frederick in about a month. From that time until 1814, when its fortifications were completely demolished it was frequently besieged. Pop. (1870) 207,997; (1880) 272,390; (1900) 422,709.

BRESSAY, *brěs'sā*: one of the Shetland Isles, e. of the mainland, and separated from Lerwick by Bressay Sound. It is 6 m. long and 2 broad, and is composed of Devonian rocks. It supplied Lerwick with peat, until the proprietor, fearing that the peat might be exhausted, stopped exportation; and it continues to supply the Shetland Isles with slates. Pop. (chiefly fishermen) about 900.

Bressay Sound is one of the finest natural harbors in the world, and is a rendezvous for herring-boats, and for all whalers and other vessels proceeding north. East of B., and separated from it by a narrow and dangerous sound, is a rocky isle, called Noss, 6 m. in circuit, girt on all sides by perpendicular cliffs, and rising abruptly from the sea to the height of nearly 600 ft., with a flattish top. A detached rock, or holm, on the s.e. side of the Noss, used to be communicated with by means of a cradle or wooden chair run on strong ropes, stretched across a yawning gulf, and admitting a man with a sheep to be drawn over at a time.

BREST: strongly fortified city, in the dept. of Finistère.

BREST-LITOVSK—BRETAGNE.

France; one of the chief naval stations of the country; lat. $48^{\circ} 24'$ n., long. $4^{\circ} 29'$ w.; on the n. side of the Bay or Road of Brest, which forms one of the finest harbors in the world. The only entrance to the bay is by a narrow channel called *Le Goulet*, which is scarcely a mile wide, and is strongly defended by batteries; the difficulty and danger of access to hostile ships being increased by certain rocks in the centre of the channel. A new floating dock, quays, and pier were completed 1876 at a cost of 22,500,000 francs. The small river Penfel flows through the town, which is, on the whole, irregularly built on an uneven site, and has steep, narrow, dark, and very dirty streets. In some parts, communication between the lower and upper parts of the town can be effected only by stairs. The new quarter, the parade, and the quays, are more cleanly. B. has extensive ship-building yards, rope-walks, storehouses, etc.; its industry, indeed, is confined entirely to the equipment of the navy in its various branches. It has telegraphic communication with America by a submarine cable. The Bagnes (q.v.) or hulks no longer exist, the prisoners having been removed to the penal colony of Cayenne. B. is a very ancient place, but it was not of much importance until the 17th c. Its admirably defensive position made it an object of contention to French, English, and Spaniards. In 1631, Cardinal Richelieu resolved to make it a naval station, and commenced the fortifications, completed by Vauban, but since greatly extended. In 1694, the English under Lord Berkeley were repulsed here with great loss. In 1794, the French fleet, under Admiral Villaret-Joyeuse, was defeated off B. by the English fleet under Admiral Howe. Pop. (1881) exclusive of garrison, 64,599; (1891) 75,854.

BREST-LITOVSK, *brěst-lě-tōvsk'*: town of Russian Poland, 131 m. s. of Grodno; lat. $52^{\circ} 5'$ n., long. $23^{\circ} 27'$ e.; at the confluence of the Mukhovetz and the Bug. As two very important railroads intersect here, the trade by river, canal, and railroad is extensive. B. has a fortress, and a military school, and is the seat of an Armenian bishopric. It has tanneries, and manufactures of cloth. It is noted for the victory of Souwaroff over the Poles 1791. Pop. (1880) 38,672; (1892) 44,140.

BREST-SUMMER, or BREAST-SUMMER, *brěst'-sŭm-měr*, or BRESSUMMER, n. *brěs'sŭm-měr* [*breast*, and W. *swmer*, a beam (see SUMMER 2)]: a beam of wood or iron introduced into the front or external walls of a building to carry the weight of an upper structure—used principally over shop-windows.

BRETAGE, n. *brět'āj*: see BRATTICE.

BRETAGNE, *brě-tân'*, or BRITTANY, *brīt'a-nĭ* (*Britannia Minor*): a peninsula in the n.w. of France, formerly a province, and now divided into the depts. of Finistère, Côtes-du-Nord, Morbihan, Loire-Inférieure, and Ille-et-Vilaine; surrounded by the sea on the n., w. and s.w. Though the height of the mountains is nowhere considerable, their structure gives the peninsula a wild and savage aspect.

BRETFUL.

Clay-slate forms the centre of the country, and masses of granite rise in the n. and the s. The climate is often foggy, and subject to violent storms of wind. Large tracts of land lie uncultivated; but in the well-watered valleys vegetation is luxuriant. In ancient times, B., under the name of Armorica, was the central seat of the confederated Armorican tribes, who were of Celtic and Kymric origin. Traces of them remain in the old Kymric dialect of the three most westerly departments, and in the numerous so-called Druidical monuments. The name *Armorica* was changed for that of B., in consequence of the numerous immigrations from Great Britain in the 5th and 6th c. The peculiar, shut-in situation, and the characteristics of soil and climate in B., seem to have had a powerful effect on the character of its people. The Breton has generally a tinge of melancholy in his disposition; but often conceals, under a dull and indifferent exterior, a lively imagination and strong feelings. 'The tenacity with which the Breton clings to the habits and belief of his forefathers, is apparent by his retention of the Celtic language almost universally in Basse B., and by his quaint costume, which in many districts is that of the 16th c.' The greater number of the people are found to be ignorant and coarse in their manners, and their agriculture is very rude and unfitted to develop the natural resources of the country. Until recent years, B. had escaped the observation of tourists; but it has now been found out, and seems likely to be considerably visited and written about. It will be some time yet before it is exhausted, and, apart from the beauty of its scenery, it has great interest as the only place where men can be seen living and acting much as our forefathers did three centuries ago. Under the Romans, the country, after B.C. 58, was made the *Provincia Lugdunensis Tertia*; but its subjugation was hardly more than nominal, and it was entirely liberated in the 4th c., when it was divided into several allied republican states, afterward changed into petty monarchies. B. became subject to the Franks in the reign of Charlemagne, and was handed over by Charles the Simple to the Northmen 912. After some fierce struggles, the Bretons appear to have at length acknowledged the suzerainty of the Norman dukes. Geoffroi, Count of Rennes, was the first to assume the title of Duke of Bretagne 992. The duchy of B. was incorporated with France 1532, by Francis I., to whom it had come by marriage, and subsequently shared in the general fortunes of the empire, but retained a local parliament until the outbreak of the Revolution. During the Revolution, B., which was intensely loyal, was the arena of sanguinary conflicts, and especially of the movements of the Chouans (q.v.), who reappeared as recently as 1832. Daru, *Histoire de B.* (Par. 1826); Roujoux, *Histoire des Rois et des Ducs de B.* (Par. 1829); Courson, *La B. du 5^e au 12^e Siècle* (1863); Le Saint, *La B. Ancienne et Moderne* (1873); De Kerorguen, *Recherches sur les Etats de B.* (1875).

BRETFUL, a. *brët'fûl* [an assumed corruption of OE.

BRETHREN—BRETON DE LOS HERREROS.

breed, the brim of a hat: Scot. *breid*, broad]: in *OE.*, full up to the brim; quite full.

BRETHREN, n. plu. *brēth'rēn* [plu. of BROTHER, which see]: members of the same society or profession.

BRETHREN AND CLERKS OF THE COMMON LIFE, or, of the COMMON LOT: see BROTHERHOODS, RELIGIOUS.

BRETHREN AND SISTERS OF THE FREE SPIRIT, or SPIRITUALISTS: see BEGUINES: BROTHERHOODS, RELIGIOUS.

BRETHREN OF THE CHRISTIAN SCHOOLS: an order organized at Rheims 1679, whose object it was to furnish instruction for the poor. It was sanctioned by Benedict XIII, 1725. At Paris, they refused to take the oath to obey the civil constitution in 1792, and hence were expelled from their houses and forbidden to teach. They returned 1801, and soon became numerous in France, Italy, and other countries. Since about 1830, they have evening schools for adults. Their principal establishment is in Paris; and, in 1868, there were more than 10,000 brethren in France alone, teaching 300,000 persons. They have also members in the United States.

BRETHREN, WHITE: sect of the 15th c., that arose in the Alps of northern Italy. Their leader pretended to be the prophet Elias; they wore white apparel, and carried crucifixes from which blood appeared to issue. Their leader, whose name is unknown, prophesied that the end of the world was at hand; and met with success for a while; but Boniface IX. caused him to be arrested and burned at the stake, and in less than a year the sect had ceased to exist.

BRETIGNY, *brā-tēn-yē'*: village of France, dept. of the Eure-et-Loir, about 6 m. s.e. of Chartres, on the railway between Paris and Orleans. B. is celebrated as the place where, 1360, Edward III. concluded a peace with France, by which John II. of France was released from his captivity in England, on agreeing to pay three million crowns for his ransom, England renouncing her pretensions to Normandy, Anjou, Maine, and Touraine, and being confirmed in her possession of Gascony, Guienne, and several other parts in France recently acquired by conquest.

BRETON, n. *brīt'ūn*, pertaining to BRITTANY, or BRETAGNE, in France.

BRETON DE LOS HERREROS, *brā-tōn' dā lōs ěr-rā'-rōs*, DON MANUEL: 1800, Dec. 19—1873, Nov.; b. Quel, province of Logroño: most popular of modern Spanish poets. He received his earliest education in Madrid; and served as a volunteer in the army 1814–22. Subsequently he held several situations under government, but always lost them on account of his expression of liberal opinion. As early as his 17th year he wrote a comedy entitled *A la Vejez Viruelas*, which, 1824, was brought upon the stage with great success. Thenceforward he furnished theatrical managers with more than 150 pieces, partly original, partly adaptations from the older Spanish classics, and partly

BRETSCHNEIDER—BRETTEEN.

translations from the Italian and French, most of which have been highly popular. In addition to these, B. published *Poesias Sueltas* (Madrid, 1831, and Paris, 1840); several volumes of satirical verse; a long humorous poem, called *La Desvergüenza, Poema Jocosario* (Madrid, 1858), etc. All B.'s poems are remarkable for their singularly sweet, yet powerful diction, and for the harmony of the versification. His peculiar sphere is the comic and the satirical, in which the Spanish or national qualities of his genius find their freest expression, and in which also he displays most ease and self-reliance. B. superintended the issue of a collected edition of his poetical works 1850-52 (5 vols., Madrid). He died at Madrid.

BRETSCHNEIDER, *brèt'shnī-dēr*, HEINRICH GOTTFRIED: 1739, Mar. 6—1810, Nov. 1; b. Gera, Germany. He was sent for education to the Institute of Herrnhuters at Elbersdorf, afterward to the Gymnasium at Gera. He became captain of horse in a Prussian volunteer corps, in which service he was made prisoner, and retained in a French fortification till 1763. In 1775, B. visited England, France, and Holland; and in 1778 was nominated librarian to the Univ. of Ofen, where he was persecuted by the Jesuits, whose hatred he had excited. This brought him under the notice of Joseph II., who, 1782, appointed him one of the inspectors of studies. B. was the author of tales, poems, and satires. The latter are attacks upon every kind of injustice and falsehood. In his 'Almanac of the Saints (*Almanach der Heiligen*) for the year 1788, with Copperplates and Music, printed at Rome, with the permission of the Principals,' the priesthood is severely attacked, and the legends of the monks ridiculed. Like Nicolai, B. was very bitter against the 'Werther' mania prevalent in his time.

BRETSCHNEIDER, KARL GOTTLIEB: 1776, Feb. 11—1848, Jan. 22; b. Gersdorf, Saxony: German theologian. He studied theology at Leipsic, was appointed pastor at Schneeberg 1807, general supt. at Gotha 1816, and 1840 obtained the dignity of councilor of the upper consistory. B. has a reputation for sober, reflective, rationalistic thought. The character of his intellect rendered him unable to enter into the profound speculations of men like Schleiermacher and Schelling; but nevertheless by his diligence, clear, incisive understanding, and strength of character, he secured a permanent place in the history of German theology. His most important work in dogmatics is the *Manual of the Evangelical Lutheran Church* (2 vols., Leip. 1814-18). In 1824, B. published *Lexicon Manuale Græco-Latinum in Libros Novi Testamenti* (2 vols., Leip. 1824). In 1832, appeared *Der Simonismus und das Christenthum*; in 1835, *Die Theologie und die Revolution*.

BRETT, n. *brèt*: a short term for britzska, a four-wheeled carriage having a calash top and seats for four besides the driver's seat.

BRETTEEN: town of Baden, about 13 m. e. of Carlsruhe, noteworthy chiefly as the birthplace of Melancthon,

BRETTICE—BRETTS AND SCOTS.

The house in which he was born is pointed out to travellers. Pop. (1880) 4,034; (1885) 3,932; (1891) 3,433.

BRETTICE: see BRATTICE.

BRETTS AND SCOTS, THE LAWS OF THE (Lat. *Leges inter Brettos et Scotos*, Old Fr. *Lusage de Scotis et de Bretis*): name given, in the 13th c., to a code of laws in use among the Celtic tribes in Scotland. The 'Scots' were the Celtic people dwelling in the w. and more mountainous districts n. of the Forth and the Clyde, who, when it became necessary to distinguish them from the Teutonic inhabitants of the low country, received the names of 'the Wild Scots,' 'the Irishry of Scotland,' and, more recently, 'the Scotch Highlanders.' The 'Bretts' were the remains of the British or Welsh people, who were at one time the sole or chief inhabitants of the region now divided into the shires of Dumbarton, Renfrew, Ayr, Lanark, Peebles, Selkirk, Roxburgh, Dumfries, and Cumberland. This province was for some centuries an independent kingdom, known by the names of 'Cambria,' 'Cumbria,' 'Strathclyde,' and 'Strathclyde and Reged.' It became, about the middle of the 10th c., a tributary principality held of the king of the English, by the heir of the king of the Scots. It so continued till after the beginning of the 12th c., when Cumberland having been incorporated with England, the gradual absorption of the rest of the territory into the dominions of the king of the Scots seems to have been imperceptibly completed. The last 'Prince of Cumbria' named in record was the brother and heir of King Alexander I. of Scotland, 'the Earl David,' as he was called, who, on his brother's death 1124, himself became king of the Scots. No more is heard of Cumbria as a principality; but 'the Welsh' continue to be named among its inhabitants in the charters of King David's grandsons—King Malcolm the Maiden (1153-65), and King William the Lion (1165-1214). And they seem to have retained more or less of their ancient Celtic laws until after the beginning of the 14th c. It was not until 1305 that an ordinance of King Edward I. of England, who appeared then to have reduced all Scotland to his subjection, decreed 'that the usages of the Scots and the Bretts be abolished, and no more used.' It is unknown how far this prohibition took effect. Of the code which it proscribed, only a fragment has been preserved. It was printed first by Sir John Skene, in his *Regiam Majestatem* (Edin. 1609). But by far the best edition is that of Mr. Thomas Thompson and Mr. Cosmo Innes, in the *Acts of the Parliaments of Scotland*, vol. i., pp. 299-301 (Edin. 1844), where the laws are given in three languages—Latin, French, and English. The French version, which is the oldest, is printed from a manuscript of about 1270, formerly in the public library at Bern, Switzerland, now in the Register House at Edinburgh. The fragment of the 'laws of the Bretts and the Scots' thus published, is of much the same nature as the ancient laws of the Anglo-Saxons, the Welsh, the Irish; and other nations of w. Europe. It fixes the *cro*, or price

BRETZEL—BREUGHEL.

at which every man was valued, according to his degree, from the king down to the churl, and which, if he were slain, was to be paid to his kindred by the homicide of his kindred. The cro of the king was 1,000 cows; of the king's son, or of an earl, 150 cows; of an earl's son or of a thane, 100 cows; of a thane's son, $66\frac{2}{3}$ cows; of the nephew of a thane, or of an ogthiern, 44 cows and $21\frac{1}{3}$ pence; and of a villain or churl, 16 cows—all persons of lower birth than a thane's nephew, or an ogthiern, being accounted villains or churls. The cro of the married woman was less by a third than the cro of her husband. The cro of the unmarried woman was as much as the cro of her brother. Other chapters fix every man's *kelchyn* or *gelchach*, *gallnes*, and *enuach*—Celtic terms not yet satisfactorily interpreted, but apparently equivalent to the *fyhtwite*, *mund*, and *manbot* of the Anglo-Saxons, as the *cro* of the Bretts and Scots appears to answer to the *wergild* of the English. A chapter 'of blood-drawing'—corresponding with the *blodwyte* of the Anglo-Saxons—fixes the fine to be paid for a blow to the effusion of blood, according to the degree of the person wounded and the place of the wound.

BRETZEL, *brët'sel* [Ger.]: a hard brittle cake covered with salt, usually written Pretzel.

BREUGHEL, *bruh'gel* or *bruh'hél*: name of a famous family of Dutch painters.

PETER BREUGHEL: 1510 (or 30)–1569; head of the family; b. in the village of Breughel, near Breda; d. Brussels. He was a scholar of Peter Koeck van Aelst, travelled through Italy and France, and on his return, fixed his residence at Antwerp. He painted chiefly the pleasures of rustic life, for which he had a great relish, and which he transferred to his canvas with clear insight and vivid coloring, though unnecessarily exceeding at times the coarseness of his subject. He also executed several historical pieces, such as his *Building of the Tower of Babel*, now preserved in the gallery at Vienna.

His son, PETER BREUGHEL: 1559–1625: distinguished by the strange title 'Hellish Brueghel'—because he loved to paint scenes in which the leading characters were devils, hags, robbers, etc. His paintings of *Orpheus*, and the *Temptation of St. Antony*, are the most remarkable of his pieces.

JAN BREUGHEL: 1569–1625; another son; on account of the splendid apparel which he wore when he became rich, usually called Velvet B. He was an industrious painter, distinguished for his landscapes and for his minute finish of small figures. In concert with Rubens, who supplied the two chief figures, he painted *Adam and Eve in Paradise*, and *Vertumnus and Bellona*. These with the *Four Elements*, are his chief works.

Other members of the same family were known as painters: AMBROSE B., director (between 1635–70) of the Acad. of Painting, Antwerp; ABRAHAM B., painter of fruits, flowers, and birds, lived long in Rome and Naples, where

BREVE—BREVIARY.

he died 1690; JAN BAPTIST B., b. Rome, d. 1700; flower-painter; finally, CASPAR B., flower-painter.

BREVE, n. *brēv* [It. *breve*—from L. *brēvis*, short]: note in music, which in the old notation of Guido d'Arezzo, had the value of two whole bars. It is written thus, \sqcap , or \sqcup , or $\parallel \sqcup$. The note for a whole bar in modern notation is called semibreve, and has the value of four crotchets. In triple time the B. contained three semibreves. The B. is now used only in *a la capella* movements, psalm-tunes, and fugues, or at the close of a composition; the mark (—) in printing, placed over a vowel to indicate its quantity or its quality of sound; a letter of state; a short note or minute; a kind of writ; see also brief for three last meanings.

BREVE: see ANT-CATCHER.

BREVE, or BRIEVE, in the practice of the Scotch Law: a writ issuing from chancery in the name of the crown, to a judge, ordering him to try by jury the points or questions stated in the B. In ancient times, these writs appear to have been the foundation of almost all civil actions in Scotland; they are now used in only a few special cases.

BREVET, n. *bre-vēt* [F. *brevet*, a commission—from mid. L. *brevētum*, a papal brief or letter—from L. *brēvis*, short]: the commission which confers on an officer the nominal rank next higher to the one which he holds, but which does not entitle him to the increased pay. Brevets were conferred in the U. S. army in great number during and at the end of the rebellion. In the British army, they were given in immense numbers before 1854, at which date general brevets were abolished, and they are now conferred more sparingly and for services (see COMMISSIONS, ARMY): ADJ. taking rank by brevet. BREVET'CY, n. *-sī*, the rank or condition of a brevet commission.

BREVIARY, n. *br'vī-ēr-ī* [F. *bréviaire*, a breviary: L. *brēviārium*, an abridgment or abstract, in mid. L., a manual of daily prayers—from L. *brēvis*, short: It. *breviario*]: an abridgment; a manual of daily prayers; the book containing the daily service of the Rom. Cath. Church. The B. is an *abbreviation*, as well as an amended arrangement of the more ancient offices used at the Seven Canonical Hours, which are Matins, Prime, Tierce, Sext, Nones, Vespers, and Compline: see CANONICAL HOURS. The books in which these offices were contained were formerly distinct—viz., 1. The *Psalter*, which included the Psalms of David according to St. Jerome's Galbian version, the Te Deum, the Athanasian Creed, etc.; 2. The Bible; 3. The *Antiphonarium*, containing the anthems and responsories; 4. The *Hymnarium*; 5. The *Collectarium*, or the collects to be said at the end of the services; 6. The *Homiliarium*, *Passionarium*, and *Martyrologium*, containing the comments of the Fathers upon the gospel of the day, and accounts of the martyrdoms of the saints for each distinct festival. Out of all these separate books, the B. was compiled, about the 11th c., by Pope Gregory VII., as is supposed; the lessons, anthems, hymns, and responsories for the different days of the year being all arranged, in their proper places, in the same volume with

BREVIARY.

the psalter, prayers, etc. In later times, the B. was divided into two parts, one for each half of the year, as was the case with those of Salisbury, York, and Hereford, used in England; and afterward into four parts, so as to be more portable, whence it was also called *Portiforium*. The B. is an entirely distinct book from the Missal (q.v.), the latter containing the proper offices for the service of the sacrifice of the mass.

The last settlement of the B. was under the pontificate of Pius V., and his bull of 1568 is that by which the present daily office of the Roman Church is authorized. This edition was compiled by the College of Sacred Rites at Rome, in conformity with the decrees of the Council of Trent, because of the variety of *Uses*, as they were called, which at that time existed in different dioceses. The bull of Pius V. abolished the use of all breviaries, except such as could prove a prescription of 200 years. This exception would have extended to the breviaries of Salisbury and York, if the Church of England had not already thrown off Rome's supremacy, and compiled a new Book of Common Prayer for herself. After this, 1602, Clement VIII. had a standard edition printed at the Vatican, to which all future editions were to conform; and again, 1631, Urban VIII. caused the metres of the hymns and the Latinity of the whole to be carefully revised. The B. is in Latin, portions of it being sometimes translated for the use of the unlearned. It is necessarily a very bulky volume, when complete; and although some legends of saints and martyrs may be of doubtful authenticity, yet it is a mine of interesting and devotional reading. Its general contents may be judged of from what has been already stated as to the sources from which they were drawn, every saint in the calendar having his proper services for the different canonical hours. The festivals of the Roman Church have their services, according to their importance, duplex, semi-duplex, or simplex—i. e., double, semi double, or simple: these, again, are further distinguished, so that there are no less than 9 classes of services—the Ferial or ordinary week day, the simple, the day with an octave, the semi-double, the Dominical or Sunday, the double, greater double, double of the second class, double of the first class. Indeed, so elaborate and perplexing are the rubrical directions, that it is impossible to form any idea of them without consulting the B. itself, and there are probably many priests not thoroughly conversant with their own ritual.

The B. contains, besides an office for the dead, and other smaller offices, three kinds of office in honor of the blessed Virgin Mary—viz., 1. The full office, said on such festivals as the Purification, Annunciation, Immaculate Conception, Assumption, etc.; 2. The office of the Virgin Mary on Saturdays; 3. What is called the 'little office,' or the hours of the Virgin. This last was in use as early as the 7th c., and was enjoined by the Council of Claremont, 1096, to be said by the clergy daily, and by the laity on Saturdays, but the bull of Pius V. removed this obligation except as to clergy in choirs. The Roman Church enjoins, under pain

BREVIER—BREVIPENNES.

of excommunication, all 'religious' persons—i. e., all persons, male or female, who have taken vows in any religious order—to repeat, either in public or private, the services of the canonical hours as contained in the breviary. For the influence of the old breviaries on the English Common Prayer-book (q.v.) consult Palmer's *Antiquities of the English Ritual*, and Maskell's *Monumenta Ritualia*. The matins or morning-prayer of the English Prayer-book is an abridgment, with many omissions and additions, of the matins, lauds, and prime of the B., while the office of even-song, or evening-prayer, is in like manner an abridgment of the ancient vespers and compline.

BREVIER, n. *brē-vēr'* [L. *brēvis*, short—said to have been so named as having been the type in which *Breviaries* were printed]: a common printing type: see TYPE. (This work is printed in brevier.)

BREVILINGUIA, n. plu. *brěv'ī-līng'gwī-ă* [L. *brēvis*, short; *lingua*, a tongue]: a division of the *Lacertilia*, comprising the *Geckos*, etc.

BREVIPED, a. *brěv'ī-pěd* [L. *brevis*, short; *pes*, genit. *pedis*, a foot]: having short 'feet,' meaning legs: N. a short-legged bird.

BREVIPENNATÆ, n. plu. *brěv'ī-pěn-nă'tē* [L. *brēvis*, short; *pennātus*, furnished with feathers or wings—from *penna*, a wing]: group of natatorial birds including the penguins, auks, etc. BREVIPEN'NATE, a. *-pěn'năt*, short-winged.

BREVIPENNES, *brěv-ī-pěn'nēz*, in Ornithology: according to the system of Cuvier, that tribe of the order *Grallatores* (q.v.) in which the ostrich, cassowary, rhea, or nandou, emu, and apteryx are comprised, also the extinct dodo (see these titles). The B. are characterized by shortness of wing, which incapacitates them for flight, but use their wings to aid them in running, which they do with great rapidity. Their *sternum* (breast-bone) has no ridge or keel. They constitute the family *Struthionidæ* of many ornithologists, and are by some placed among Gallinaceous (q.v.) Birds, to which they are allied by the form of their bill and their choice of food. They are, however, very different from all other birds, and whether ranked among Grallatores or Gallinaceous Birds, do not seem to form a natural part of the order. The gigantic *Dinornis* (q.v.) and other fossil birds of great interest exhibit the characters of the *Brevipennes*.

Gigantic birds, of which the footsteps appear imprinted on sandstones in the valley of the Connecticut and elsewhere, seem also to have belonged to this tribe. No remains or traces of such birds are, however, found nearly so ancient as many remains of quadrupeds. But to whatever geological period the commencement of their existence is to be referred, a peculiar interest is attached to them, because its close may be regarded as probably near. There is no tribe of birds that more generally shuns man, or disappears before the increase of population. The cassowary and the emu are rapidly becoming rare. The ostrich, the rhea, the

BREVITY—BREWSTER.

apteryx, the notornis, etc., are found only in deserts or other deep solitudes.

BREVITY, n. *brěv'č-tě* [F. *brève*té—from L. *brěvītātem*, shortness—from *brěvis*, short]: shortness; conciseness; contained in few words.

BREW, v. *bró* [AS. *brėowan*; Dut. *brouwen*, to brew: OF. *braux*; Gael. *braich*; W. *brag*, sprouted corn, malt: Icel. *brugga*, to brew: AS. *brug*, malt: Ger. *brauen*, to brew]: to make beer, ale, etc., by boiling and mixing the materials and fermenting them; to contrive; to plot. **BREW'ING**, imp.: N. the act of making beer from malt, etc. (see **BEER**); the quantity made at one time. **BREWED**, pp. *bród*. **BREW'ER**, n. one who. **BREWERY**, n. *bró'ér-ě*, the house containing the apparatus where brewing is carried on; also **BREW-HOUSE**. **BREWAGE**, n. *bró'áj*, a mixed drink.

BREWER, DAVID JOSIAH: Amer. jurist; nephew of Justice David Dudley Field; b. 1837 in Smyrna, Asia Minor; admitted to bar in N. Y. city 1858; later removed to Kan.; judge of probate and crim. courts of dist. of Leavenworth co., 1862-65; judge of dist. court 1865-69; county atty. 1869-70; judge of supreme court of Kan. 1870-80; judge of circuit court of U. S. 1884-89; became associate justice of U. S. supreme court 1889. In 1896 was appointed by President Cleveland a member of Venezuela Commission and chosen its chairman. His most conspicuous work as a jurist was construction of Prohibition and R. R. legislation in Kan.

BREWER, WM. HENRY: American scientist; b. 1828, Sept. 14, in Poughkeepsie, N. Y.; was grad. at Yale Univ. 1852; later studied in Heidelberg, Munich, Paris; Prof. of Chem. and Geol. at Wash. Coll., Pa., 1858-60; first assist. on geol. survey of Calif. 1860-64; Prof. of Chem., Univ. of Calif., 1863-64; became Prof. of Agric. at Sheffield Scien. Sch. in latter year. He wrote *Botany of Cal.*

BREWIS, n. *bró'is* [M.H.G. *brê*, *brêe*; AS. *brīwes*, brewis]: broth; liquor in which beef and vegetables have been boiled; a piece of bread soaked in boiling fat pottage, made of salted meat.

BREWSTER, BENJ. HARRIS: American lawyer; 1816, Oct. 13—1888, Apr. 4; b. in Salem co., N. J.; was grad. at Princeton Univ. 1834; admitted to bar in Phila. 1838; appointed by Pres. Polk a com. to adjudicate claims of Cherokee Indians against U.S.Gov.; by Gov. Geary, atty.-gen. of Pa. 1867; and by Pres. Arthur U. S. atty.-gen. 1881.

BREWSTER, *bró'ster*, Sir DAVID: 1781, Dec. 11—1868, Feb.; b. Jedburgh, Scot.: natural philosopher and writer. He was educated for the Church of Scotland at the Univ. of Edinburgh, where he distinguished himself. In 1808, he undertook the editorship of the *Edinburgh Encyclopædia*, to which he contributed many important scientific articles. Previous to this, he had entered deeply on the study of optics, with which his name is now enduringly associated. The philosophical toy, called the kaleidoscope, was invented by him 1816. In 1819, in conjunction with Prof. Jameson, he established the *Edinburgh Philosophical Jour-*

BREWSTER—BREZOWA.

nal; and in 1831 he was one of the chief originators of the British Assoc. for the Advancement of Science. The honors conferred on this distinguished man make up a long catalogue. In 1815, he obtained the Copley medal of the Royal Soc. for one of his optical discoveries, and soon afterward was elected a Fellow; in 1816, he received half the physical prize bestowed by the French Institute for two of the most important scientific discoveries made in Europe during the two preceding years; in 1819, the Royal Soc. awarded him the Rumford gold and silver medals, for his discoveries on the polarization of light; in 1825, he became corresponding member of the Institute of France; in 1832, he was knighted, and had a pension conferred upon him; in 1838, he was chosen principal of the united colleges of St. Leonard and St. Salvador, St. Andrews; in 1849, on the death of Berzelius, in the preceding year, he was elected one of the eight Foreign Associates of the French Institute, the highest scientific distinction in Europe. Sir David was also a member of the Imperial and Royal Academies of St. Petersburg, Berlin, Copenhagen, and Stockholm; presided over the British Assoc., and in 1851, over the Peace Congress held in London. In 1859, on the death of Dr. John Lee, he was chosen principal of the Edinburgh Univ. His principal work is his *Life of Newton*, first published 1828, in the Family Library, issued in a new and greatly enlarged form 1855. Among his works are his interesting *Letters on Natural Magic*, addressed to Sir Walter Scott, published also in the Family Library; *More Worlds than One* (1854); his treatises on the Kaleidoscope and on Optics (Cabinet Cyclopædia); his *Martyrs of Science*; and his treatises in the *Encyclopædia Britannica* on Electricity, Magnetism, Optics, the Stereoscope, etc. Among periodicals to which he contributed largely are the *Edinburgh* and *North British Reviews*. See *Home Life of B.* by his daughter, Mrs. Gordon (1869).

BREWSTER, *bró'stér*, WILLIAM: 1560–1644; b. England; son of William B. of Scrooby, Eng. (some say son of Henry or James B., vicar of Sutton-cum-Lound). He studied for a time at Cambridge Univ., accompanied William Davison, ambassador to the Netherlands, and continued in his service two years. He became an earnest Christian following the Puritan teachings of the Rev. Thomas Hooker; and when he and his fellow 'separatists' had become objects of persecution, he emigrated with other Puritans to Holland and thence to Plymouth, Mass., 1620. He was an elder in the church at Plymouth, and is generally known as 'Elder Brewster.'

BREWSTERITE, *n. brós'tér-īt* [after Sir David Brewster]: a mineral, a silicate of lime and alumina, occurring in short prismatic crystals of a grayish-white or yellowish color, and vitreous lustre. BREWS'TOLINE, *n. -tō-lên*, a transparent colorless fluid occurring in minute cavities of rock-crystals, etc., said to be liquid carbonic acid.

BREZOWA, *brā-zō'vá*: market town of Hungary, county

BRIAN BOROIMHE—BRIAREUS.

of Neutra, on a river of the same name, 20 m. n.w. of Leopoldstadt. Pop. 6,000.

BRIAN BOROIMHE, *brī'an bo-roym'*, or **BRIAN BORU**, *bo-rō'*, King of Ireland: d. 1014: ascended the throne of both Munsters—answering to the present counties of Tipperary and Clare—978. Some time afterward, he deposed O'Maelachaghlin, and became supreme ruler of Ireland. The surname, Boroimhe, signifying tax, was given him in consequence of the tribute in kind he levied from the various provinces. King Brian supported a rude but princely state at his chief castle at Kincora, in the neighborhood of the modern town of Killaloe; he had seats also at Tara and Cashel. The vigor of his reign brought prosperity to his country. He defeated the Danes in upward of 20 pitched battles, restricting their influence to the four cities of Dublin, Wexford, Waterford, and Limerick. In the battle of Clontarf (1014), in which he was killed, he gained a signal victory over a united army of revolted natives and Danes, the power of the latter receiving a shock from which it never recovered.

BRIANÇON, *brě-ōng-sōng'* (ancient *Brigantium*): town of the dept. of the Hauts-Alpes, France, on the right bank of the Durance, about 35 m. n.e. of Gap. It is the highest town in the French empire, nearly 4,300 ft. above sea-level. As the principal arsenal and depot of the French Alps, B. is very strongly fortified, while several forts guard the approaches, and every height in the vicinity is a point of defense. It is considered impregnable. Troops can readily be marched from it to the passes of the Simplon, St. Bernard, Mont Cenis, and the Col de Tende. Mont Genève affords a practicable passage into Italy from the town itself. B. has some manufactures of cotton-goods, hosiery, cutlery, crayons, etc. Pop. (1891), exclusive of garrison, 6,580.

BRIANSK, *brě-ānsk'*: town of Russia, govt. of Orel, 70 m. w. of the city of Orel. It is on the right bank of the Desna, surrounded with earthen ramparts, and has considerable trade in grain, hemp, wax, linen, cables, cordage, iron, etc., with Kherson, Odessa, and other ports on the Black Sea. B. has a cannon-foundry and 13 churches. Pop. (1880) 14,650; (1891) 16,403.

BRIAR: see **BRIER**.

BRIARE, *brě-ār'*: town in the dept. of Loiret, France; on the right bank of the Loire, at the point where the Canal de Briare enters that river, about 43 m. s.e. of Orleans. The canal, which unites the Loire and the Seine, was the first constructed in France, having been begun by Sully, and finished 1642. B. has considerable trade in wine, wood, and charcoal. It is supposed to occupy the site of the ancient *Brivodurum*. Pop. (1881) 4,577; (1886) 5,034.

BRIAREAN, a. *brī-ā're-an*: pertaining to the fabled Briareus, who had a hundred hands and fifty heads; hundred-handed.

BRIAREUS, *brī-ā're ūs*, or **ÆGÆON**: a mythological giant, one of the three sons of Uranus and Gaia (Heaven

BRIBE—BRIBERY.

and Earth), his brother giants being Cottus and Gyges. He had a hundred arms, and fifty heads. He was hurled into the sea by Neptune, and enchained under Etna by Jupiter, as a punishment for his revolt. It is difficult, from the contradictory accounts concerning the Hekatoncheires (hundred-handed giants) to determine exactly what forces of nature were symbolized by them. The hundred arms may represent the waves of the sea, and such terrible natural forces as earthquakes, etc.

BRIBE, *n.* *brīb* [*F. bribe*, a lump of bread: *W. briwco*, to break; *briw*, broken: *It. birbante*, a cheat: *Gael. brīb*, a small sum of money]: a sop, or gift to stop the mouth of one, or to obtain an undue compliance; a price or reward given to induce any one to do a criminal or immoral action; a gift for the purpose of obtaining compliance—unless in familiar language, never used in a good sense: *V.* to give or promise a reward with the view of perverting the judgment or conduct of another; to hire for a bad purpose. **BRIBING**, *imp.* **BRIBED**, *pp.* *brībd*. **BRIBER**, *n.* one who. **BRIBERY**, *n.* *brīber-ī*, the practice of giving or taking bribes. **BRIBELESS**, *a.* that cannot be bribed; without a bribe to offer; free from bribes. **BRIBABLE**, *a.* *-bī-bl*, capable of being bribed.

BRIBERY: giving, offering, or taking—also soliciting or receiving—a price in any way relating to the administration of justice, or influencing behavior in a matter of official or civil duty, leading to any act against the common rules of integrity.

Election B., a well-known form of corruption, is the canker and disgrace of constitutional government. Individuals, with little to recommend them but wealth, and it may be some local distinction, wishing to be elected representatives in the legislature, do not scruple, through various devices, to buy the votes of the meaner order of electors by bribes. *B.* at elections is practiced with more or less openness and audacity, in various parts of England and the United States; nor are base influences of this kind unknown in connection with the more meagre constitutional forms of some states of continental Europe. England has had the unenviable notoriety of being the country in which *B.* was reduced to a regular, though covert, system. It was demonstrated by parliamentary inquiry, that masses of the population in certain towns—more particularly the class called freemen—look upon the franchise as a privilege which, for personal benefit, entitles them to exact so much money for their votes. Public considerations had no weight with them whatever. It seemed to them alike their duty and their interest to sell their votes to the highest bidder. The Earl of Dundonald mentions in his *Autobiography*, that when, as Lord Cochrane, he offered himself as a candidate for Honiton, he was barefacedly told by one of the electors, ‘that he always voted for Mister Most;’ and not choosing to bribe, the earl lost his election. The amount of bribe ordinarily paid at elections in this venal class of boroughs, varied from £1 to £10, according to circum-

BRIBERY.

stances; as high a sum as £20, and even £50, had been known to be given in the extremities of a contest. For these disgraceful practices, the law threatens certain penalties; but to avoid these, and for the sake of decent appearance, the candidates employed a mean class of agents, or were in some obscure way assisted by confederates, of whose proceedings it was difficult to substantiate any guilty knowledge on the candidate's part. The agents more immediately concerned did the business of bribing in private, sometimes in darkened apartments, where no one could be seen. Formerly, the treating of voters in taverns was added to other varieties of corruption, and the demoralization that ensued on occasions of this kind amounted almost to a saturnalia. The law having interposed to check this gross form of B., the evil had latterly subsided into a common-place routine of secret money-dealings. Of course, by this illegal expenditure, with the necessary outlays which the law allows, the cost of an election was in many cases enormous. Few seats of English borough members cost less than £1,800; but double and triple this sum was a common outlay. It is well-known, that for certain boroughs any man—no matter what be his political opinions or private character—might be returned by advancing £4,000, and asking no questions as to what was done with it. As the B. was on both sides, it may be safely averred that the money spent at some contested elections amounted to £10,000. As regards elections for counties, the influences brought to bear are ordinarily of a different kind, still morally wrong. The Scotch have some reason to boast that their country is comparatively exempt from this social disorder. To avert every form of corrupt influence, the Ballot (q.v) was long vehemently urged, and an act to secure the use of the ballot in parliamentary and municipal elections throughout Great Britain and Ireland was finally passed 1872, July. So far bribery seems to have been almost unaffected by the Ballot Act. The improved mode of trying election petitions by judges has worked well. A new Corrupt Practices Act was passed 1879, and a still more stringent bill 1883. Severe sentences of imprisonment were passed on several persons of good standing, found guilty of bribery 1880-1; and several cities were deprived of electoral privileges in 1882 for corruptness. See CORRUPT PRACTICES ACT: PARLIAMENT: MUNICIPALITY.

In the United States, the laws impose severe penalties on B. of voters; yet in a few large cities, and in some portions of the country, B. of voters at state and federal elections is shamelessly carried on, and is recognized as one of the most dangerous evils in the body politic. It is not understood, however, to have yet become characteristic of elective processes as a whole, though there are indications of its rapid increase. In some states, the Australian mode of balloting is being advocated as a safeguard. Unless the spread of the evil can be checked, it evidently imperils the very existence of republican government.

Bribery of Legislators.—As the character of legislators

BRIBERY-OATH—BRICHETEAU.

must be somewhat influenced by the character of the men whom they represent, and by the methods to which they owe their official station, some legislative actions in some of the states have not escaped suspicion. Meanwhile—a hopeful sign—the public sensitiveness and watchfulness on this point has increased.

Bribery of Custom-House and Excise Officers.—It is not known to what extent this exists. The U. S. customs laws offer great temptations in their administration; but the laws also provide strict safeguards. Though some corruption exists, it is not thought to be prevalent. It is judged that the average of official honesty in this department is slowly rising.

Bribery of Judges.—Individual cases of corruption on the judicial bench cannot be denied; but the public conscience is not debauched on this question as it seems to have become on that of B. at elections; and the high purity of English and American judges may, in general, be assumed.

BRIBERY-OATH: an oath which a voter at a parliamentary election is obliged to take, if the polling sheriff sees fit to administer it, wherein he certifies that he has received no bribe for his vote.

BRIBIESCA, *bre-ve-ës'kâ*: town in Spain, 20 m. n.e. of the city of Burgos. Pop. 3,310.

BRIBIR, *bre-bër'*: town of Croatia, in Austro-Hungary, near the sea, 18 m. s.e. of the city of Fiume. Pop. 4,150.

BRIC-A-BRAC, n. *brik'-ă-bräk* [F.—a word formed from the imitation of *de bric et de broc*—*familiarly*, on this side and on that]: old curiosity objects; articles of vertu; old and second-hand objects; costly old furniture.

BRICHERASIO, *bre-kā-râ'se-ō*: town of Italy, in the province of Turin, adjacent to Pinerolo, at the foot of the Alps. Pop. 3,502.

BRICHETEAU, *brēsh-tō'*, **ISIDORE**: 1789–1861; b. in the dept. of Aude: French medical writer; pupil and assistant of Pinel, the distinguished physician. His contributions to the *Dictionary of Medical Sciences* were of an important character. He published several works which were widely read, and generally accepted as authorities by medical students.

BRICK.

BRICK, n. *brĭk* [F. *brique*, a fragment or lump, a brick AS. *brice*, a fragment: old Dut. *brick*, a bit, a fragment: It. *briccia*, a collop or slice]: a shaped mass of clay burned hard in a kiln, and used for building purposes; a small loaf of bread: V. to lay or pave with bricks; to imitate brickwork on plastered walls. **BRICK'Y**, a. -*ĭ*, full of or formed of bricks. **BRICKBAT**, n. [*brick*, and *bat*, in sense of a rough lump]: a rough piece of a brick. **BRICK-KILN**, n. -*kĭl*, a furnace in which bricks are hardened by fire. **BRICK'LAYER**, n. -*lā-ēr*, a man who builds with bricks. **BRICK-CLAY**, the clay used in the manufacture of bricks, tiles, etc.; in *geol.*, used in contradistinction to *boulder-clay*; and denoting the finely laminated clays which overlie the true boulder-clay. **BRICK'MAKER**, n. one who makes bricks. **BRICK'MAKING**, n. the business of making bricks. **BRICK'NOGGING**, n. -*nŏg-gĭng*, brickwork built up between timber framing. **BRICK'TRIMMER**, a brick arch abutting against a wooden trimmer in front of a fireplace, to guard against accidents by fire. **BRICK'TROWEL**, a trowel used by bricklayers.

BRICK, n. *brĭk* [Gael. *brigh*, vigor, pith]: in *familiar slang*, one to be depended upon; a good, solid fellow.

BRICK, *brĭk*: a mass of clay, shaped and hardened for use in building. The earliest examples of this branch of the ceramic art were doubtless the sun-dried bricks of Egypt, Assyria, and Babylonia. Many of these, which, in a northern climate, the frosts of a single winter would destroy, have been preserved for some 3,000 years by the dry, warm atmosphere of those countries. Sun-baked bricks of ancient date are found also in the mud walls of old towns in India. Kiln-baked bricks must have been the products of a later time; but they are found in all the chief ruins of ancient Babylonia, where they were often used to face or bind together walls of sun-dried bricks, and occasionally they were even ornamented with enamelled colors. Burned bricks were employed in the foundations of the Tower of Babel (Gen. xi. 3). These ancient bricks, baked whether by the sun or by fire, all were made of clay mixed with grass or straw. The ancient Greeks, probably owing to their possessing plenty of stone, cared little for building with burned clay; but most of the great ruins of Rome are built of brick, and the Romans appear to have introduced the art into England. Interesting historical information has been obtained from the impressions on Roman, and especially on Babylonian bricks. In many instances, the Roman bricks found in England have been removed from their original position, and employed in the construction of buildings of later date. The earliest instance in which bricks of the modern or Flemish make occur in England, is Little Wenham Hall, Suffolk, 1260.

Manufacture.—Clay suitable for the manufacture of common bricks is abundant, but there is great difference in the nature and quality of the clays in various localities. The basis of clay consists of hydrated silicate of alumina, with a varying proportion of other mineral matters, chiefly free

BRICK.

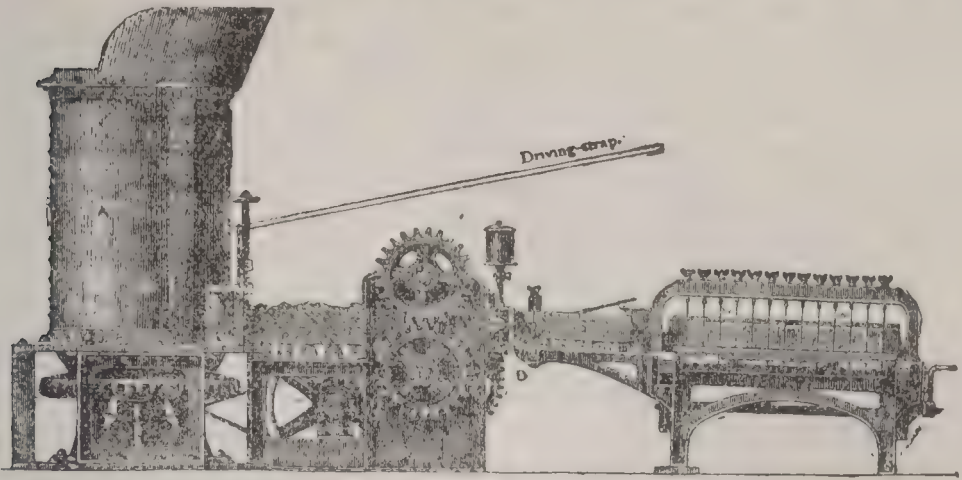
silica (sand), iron, lime, magnesia, and potash. Great advantage is derived from digging clay in autumn, and exposing it all winter to the disintegrating action of frost. This is not always attended to, but when neglected, the bricks made from it are apt to be unsound and faulty in shape. The next process is that of tempering or mixing the clay into a homogeneous paste, sometimes by the spade, more commonly in the pug-mill (see POTTERY—*Manufacture*) or by crushing between a pair of rollers; often, indeed, both are employed. In making bricks by the old hand process, the shape is given by a mold either entirely of wood, or of wood faced with metal, and without top or bottom. This admits of the clay being pressed into it by a tool called a plane, which is also used to produce an even surface on the upper and lower beds of the brick, by working off the superfluous clay. Sand is used to part the wet clay from the mold and the table on which it rests.

Although hand-made bricks are still very common, yet machinery is now always employed when large quantities are required. Brick-making machines are of two leading kinds; one class of them being constructed to work the clay in a wet plastic state, the other class requiring it to be in a semi-dry condition. Of the two sorts, the wet-clay machines are the simpler, cheaper, and can be worked by less skilled workmen. On the other hand, the dry-clay machines, which make the bricks by forcing the clay into molds by strong pressure, shorten the process, as no time is required for drying them. The bricks so made, too, are not only of a more perfect shape, but they can be molded into any form, and may even be made highly ornamental at a very slight additional cost.

As might be expected, both the dry and the wet-clay machines of different makers vary considerably in their details. The figure of one of these gives an idea of the general plan on which most of the wet-clay machines work. The machine is driven by steam, and the clay is fed by a hopper into the pug-mill A, on the central shaft of which strong pugging blades are placed in a spiral manner. These prepare and force the clay out at the bottom, whence it passes over the carrying rollers, C, to the pressing rollers, PP, which force it through a die at D, in a rectangular stream, S, so exactly shaped to the required size that nothing more is necessary than to cut it into single bricks by the wires, W. These are set in a rocking frame, which can be so adjusted as to cut the bricks on the square or at an angle; the one plan being adopted when the clay is at rest, the other while it is in motion. The figure shows what is called a single-ended machine. When double-ended, the clay is forced out at opposite sides of the pugging cylinder, and there is then, of course, a cutting-table at either side, instead of only one, as shown in our cut. Some of these machines are provided with a pair of powerful crushing rollers, which reduce any hard lumps or stones before the clay enters the pug-mill. One of the best known wet-clay machines, made by Clayton, Son & Co., London, of a size worked by a steam-engine of 16-horse power, produces

BRICK.

from 20,000 to 30,000 bricks per day. The one in the figure is Murray's patent. Drain tiles are made by the same kind of machinery, with a peculiarly constructed die, so as



Brick-making Machine.

to make the clay into a hollow tube; so also are hollow bricks, with again an alteration in the shape of the die. Hollow bricks having less body than those which are solid, are more easily, and usually more thoroughly fired. On account of this, as well as by reason of their admitting of a current of air through them, they form, as a rule, drier walls.

The fresh bricks, after being carefully dried, either in the sun or by artificial heat, are usually baked in a kiln with a suitable arrangement of fires and flues. Kilns are of many forms, and the time required for firing in them varies from 40 to 60 hours for common red and white bricks, while for some fire-bricks 150 hours are necessary. Where kilns are not used, bricks are burned in clamps, the clay requiring to be mixed up, in the process of tempering, with a quantity of ground coal sufficient to burn them. A good test of the character of a clay is obtained by the result of firing. The average contraction in the kiln for prepared clays is $7\frac{1}{2}$ per cent. If a brick contracts much more than this, the clay is too fusible; if less, then it is likely to be of an open porous body, which retains its shape well during the firing process.

All brick clays contain iron, and the color of a burned brick almost entirely depends on the amount of it which is present; thus clays containing less than 1 or $1\frac{1}{2}$ per cent of iron, change in the kiln to various shades of cream color and buff, while those containing more than 2 per cent., range in color from yellowish-fawn to dark red. Blue bricks are made from the same clay as the red by controlling in a peculiar way the supply of air in firing, and by carrying the heat slightly further. It is asserted by some that the red is changed to the black oxide of iron in the process.

Fire-bricks are made from clay as free as possible from oxide of iron and alkaline substances, so that there may be no tendency to fuse in the kiln, however high the heat. Fire-clays are abundant in the coal-measures; a celebrated

BRICKLAYING—BRICKWORK.

clay is that of Stourbridge, which is exported to all parts of the world. See FIRE-CLAY.

Much attention has been given recently to the manufacture of fine bricks and terra cotta, which is only another name for ornamental bricks of various shapes, or architectural enrichments of the same material. The effect of some of the public buildings recently erected in London and elsewhere, in which terra cotta has been used, is beautiful. Although it cannot be said to equal sandstone in appearance, it has yet the advantage of giving a much greater variety of color, and is incomparably better and more enduring than a facing of stucco or cement,

The size of bricks, in England, is commonly 9 in by $4\frac{1}{2}$ in. by $2\frac{1}{2}$ in.; in the United States, somewhat less, $7\frac{3}{4}$ (or $8\frac{1}{4}$) in. by 4 (or $4\frac{1}{2}$) in. by 2 (or $2\frac{1}{2}$) in.

BRICKLAYING—BRICKWORK: mode of placing bricks together to form a wall: the construction so made. The materials of which a town is built depends mainly on the materials furnished by the surrounding district. In a mountainous country like Scotland, cities of stone, such as Edinburgh, Glasgow, and Aberdeen, naturally abound; while London, and most of the great towns of England, situated in alluvial valleys and plains, are built of bricks from the alluvial clay beneath and around them. In Holland, where the whole country is but the delta of the Rhine, and no stone is to be found, brick is universal, even to the paving of the streets.

The standard size of English bricks being 9 inches by $4\frac{1}{2}$, the thickness of walls is regulated thereby. American bricks being of nearly the same size, involve nearly the same constructive rules. Walls are either half-brick, 1 brick, $1\frac{1}{2}$, 2, 3, or 4 bricks in thickness. In moderate-sized modern English houses, the inside partition-walls are usually half-brick, the outer walls, 1 or $1\frac{1}{2}$. In larger houses of superior construction, a thickness of two or three bricks is sometimes used. This latter thickness is seldom exceeded, except in large public works. Modern brick houses in England are, for the most part, far less substantial than those erected in former times. English building leases being usually granted for 99 years, at the expiration of which term the whole property reverts to the freeholder, the object of the builder is merely to make a house that shall stand for that period, and not to expend any money for the sake of further stability. In the United States building leases are not so common; but other causes have tended to make much of our building less substantial than that of our English forefathers. Recently however, the style of our best buildings has become much more solid. Garden-walls are commonly built but half-brick in thickness; these, however, are strengthened by 9-inch piers at intervals of 10 or 12 ft. In laying the foundations of walls, the first courses should be thicker than the intended superstructure, and the projections thus formed, usually of quarter brick on each side, are called 'set-offs.' Before laying walls of houses, trenches are dug, and the foundation tried with a

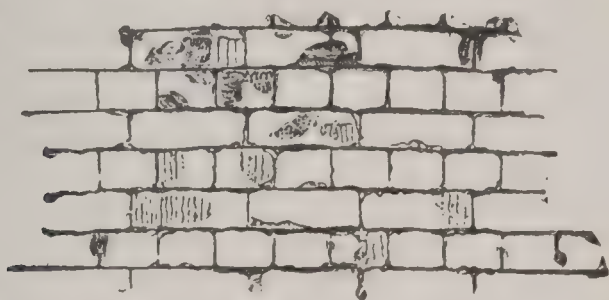
BRICKLAYING—BRICKWORK.

crowbar or hammer. If it is found loose, and the looseness due to superficial soil, this is removed, and its place supplied with fragments of stone and old broken bricks, closely rammed together. In some cases, inverted arches of brick are built for foundation, or a stratum of concrete laid down: see CONCRETE.

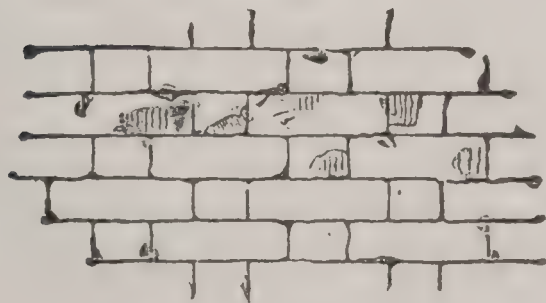
Mortar composed of lime and sand is the common cement for brickwork. It should be equally and carefully applied; and the bricks wetted, in order that the mortar may adhere more firmly, by being absorbed into their pores. The force with which good mortar is capable of adhering to bricks is very remarkable. It is found to be greatest in old structures that have been exposed to the continuous action of water. Such B. is said to be 'water-bound' by workmen, and can scarcely be separated without breaking the bricks.

A fundamental principle to be rigidly observed in laying all kinds of brick is, that *no two contiguous perpendicular joints shall fall immediately below each other*, or to use the bricklayer's phrase, the work must 'break bond.' The mode of arrangement of the bricks to effect this is called the *bond*; a layer or stratum of bricks is called a *course*. Bricks laid with their lengths in the direction of the course, and their sides to the wall face, are called *stretchers*; those laid across the line of the course, with their ends forming the wall-face, *headers*; a layer of headers, a *heading course*; of stretchers, a *stretching course*.

The two kinds of bond chiefly used are the English and Flemish bond. English bond consists of alternate stretching and heading courses; Flemish bond, of a *stretcher and*



Old English Bond.



Flemish Bond.

header laid alternately in each course (see figures). English bond is the strongest; Flemish bond, the more ornamental; and they are used accordingly. There are two

other kinds of bond occasionally used—*herring bond*, and *garden-wall bond*. The former is applied to form the core of thick walls, where Flemish bond is used for the facing. A course of bricks is laid obliquely at an angle of 45° to the face of the wall; then above it, another course at the same angle, but inclined in the opposite direction, so that the joints may cross the first. This is considered to add to the strength of Flemish bond, but is objectionable on account of the triangular interstices necessarily left between the oblique bricks and the bricks of the facing. Garden-wall bond is used only for 9-inch walls, and formed by laying three stretchers and one header, and so on in each course. In order to strengthen Flemish bond, bands of hoop-iron are sometimes laid flatwise between the courses. This 'hoop-iron bond' has superseded the old practice of using bond-timbers, which were inserted the whole length of the wall. The hoop-iron should be slightly rusted, to secure the complete adhesion of the mortar.

In constructing arches of brickwork, much care and skill are required. A wooden centring is always used; and when very rude work only is required, common bricks are laid upon the centring, and the gaping interstices at the upper ends filled with rough brick wedges. For better work, each brick has to be properly bevelled, according to the curve. When semicircular arches are made, all the bricks require an equal bevel, and therefore bricks molded uniformly to the required angle may be used; but for other curves and for flat arches, each brick has to be separately shaped by the bricklayer. In order to do this, a drawing of the required arch is made of the full size on a board; on this the bricks are laid side by side, and shaped to the lines of the drawing; they are then transferred to their corresponding place in the structure. The bricks are first rudely shaped by the *brick-ax*, then finished on the *rubbing-stone*, a piece of rough grained stone about 20 inches in diameter. In all kinds of B., the walls should be built up level throughout, in order that the *settlement* may be equal. An unequal settlement may produce a rupture of the wall.

B. is measured by the rod or by thousand. The bricklayer is always attended by a laborer or hodman, who carries his bricks and mortar in a 'hod'—a triangular wooden box, open at the top and one end, and supported on a round leg, by which the hodman holds it on his shoulder. A bricklayer's wages are considerably higher than those of the hodman or tender.

The surface of brickwork is sometimes ornamented by *pointing*. This is done by raking out the mortar of the joints to a small depth, and filling up again with blue mortar, and marking the courses with the edge of the trowel. This is called *flat-joint pointing*. When the courses are marked by a neatly pared raised line of white plaster of about half an inch in thickness, laid upon the blue mortar, it is called *tuck* or *tuck-joint pointing*. Colored bricks, as external ornament, have been extensively and most effectively used in n. Italy and Germany. The works of Mr. Ruskin, Mr. Gally Knight, Webb's *Continental Ecclesiology*,

BRICKLE—BRIDE.

Street's *Brick and Marble of the Middle Ages*, and Ferguson's *Hand-book of Architecture*, may be consulted for illustrated examples of these.

Chromatic brickwork is now becoming extensively used in England, especially by architects who are endeavoring to revive the style of architecture called by themselves English Gothic, and by some others Venetian Gothic, in which the pointed arch, formed of colored bricks, forms one of the prominent features. These architects maintain that, as they are compelled to construct with B., it is more honest to use bricks ornamentally, than by means of stucco to obtain an external imitation of stone; and as B. admits of but little ornamentation in relief, they use variation of color, of which B. is peculiarly susceptible, and thus produce a sort of architectural mosaic. The eloquent and popular advocacy of these views by Mr. Ruskin, and the skill and enthusiasm with which many young and rising architects are carrying them out, indicate a development, possibly almost a revolution in English domestic and ecclesiastical architecture.

BRICKLE, a. *brĭk'kl*: an older spelling of BRITTLE, which see.

BRICOLE, *brĭ-kōl'*: harness worn by men for dragging guns where horses cannot be used.

BRIDAINÉ, *bre-dān'*, JACQUES: 1701-67; b. Chuslan, dept. of Gard, France: French missionary. His talents and education would have entitled him to ecclesiastical dignities, but he consecrated himself entirely to the work of a travelling preacher of the gospel. He died near Avignon, while on his 256th journey; and there was scarcely a city or town in the centre and south of France where his voice had not been heard. He was as noted for his lack of bigotry as for his zeal. Though a faithful adherent of the Church of Rome, his Christian kindness led him to protest boldly against the persecution of the Protestants. He published *Antiques spirituels* (1748). A small collection of his sermons, those that he had written, was published for the first time 1825, Avignon (5 vols.).

BRIDE, n. *brīd* [AS. *bryd*; Ger. *braut*, a bride: Goth. *bruths*, daughter-in-law: Icel. *brúthr*, a bride: W. *priod*, married: Gael. *breid*, a woman's head-dress, a female badge of marriage]: a woman about to be married, or newly married. BRIDAL, a. *brī'dāl* [AS. *brydeale*, bride-ale, the marriage-feast, then the marriage itself]: pertaining to a wedding. N. a wedding or marriage. BRIDE- or BRIDE'S-MAN, a male attendant on a bride and bridegroom. BRIDE- or BRIDE'S-MAID, a female attendant on a bride. BRIDE- or BRIDE'S-CAKE, a wedding-cake. BRIDE'GROOM, n. [AS. *bryd-guma*—from *guma*, a man: Icel. *bruthgumi*; Ger. *bräutigam*: a bride-groom]: the man about to be married, or newly married. BRIDE-STAKE, a stake or pole set in the ground, round which the guests at a wedding danced, as round a Maypole.

BRIDE, SAINT: see BRIDGET. SAINT.

BRIDE—BRIDAL.

BRIDE—BRIDAL: referring to a woman about to be married, or newly married. the word *bride* (the radical signification of which is thought to be 'carried home,' from the usage of carrying her to her husband's house) is common to all the Teutonic languages, and is seen in a well-known Sanskrit root. The word *bride*, with the addition of the syllable *groom* [a corruption of Ang.-Sax. *guma*; cognate, with Dutch *gom* in *bruidegom*, and Ger. *gam* in *bräutigam*, Lat. *homo*], denotes the man about to be married or newly married [Ang.-Sax. *bryd-guma*]. *Bride* is the root of a variety of terms connected with marriage, as *bride-favors*, *bride-cake*, etc. *Bridal* is for *bride-ale* (*ale* being a common name for a feast—there were *scot-ales*, *church-ales*, *bid-ales* and *bride-ales*), the marriage-feast. *Bridemaids*, or attendants on brides, appear to have been in use among the Anglo-Saxons, and are mentioned in early accounts of marriage ceremonies. A part of their duty consisted in dressing and undressing the bride. *Bridemaids*, or *bridesmaids*, as mere ceremonious attendants at marriages, are still in use though sometimes under varying names. The husband had an analogous body of attendants, called *bridegroom-men* or *groomsmen*; but they have largely disappeared in modern usage, and their representative is one confidential friend in attendance. In Scotland, and of late in the United States, this personage is called the *best man*. One of his duties is to pull off the bridegroom's right-hand glove, while one of the *bridesmaids* does the same service for the bride, when the pair are requested to join hands.

BRIDE-FAVORS are small knots of white ribbons, pinned to the breasts of all who are in attendance at weddings: even the post-boys and their horses' heads are not left undecorated with these gay trappings. The origin of the *bride-favor* is said to be the *true-lovers'-knot*—something symbolical of the union of hearts and hands on the occasion. In various old plays and poems there are allusions to *bride-favors* or ribbons, as that in Herrick's *Hesperides*:

What posies for our wedding-rings,
What gloves we'll give and ribbonings.

The **BRIDE-CAKE** also is symbolical in its origin. 'The ceremony used at the solemnization of marriage among the Romans was called *confarreatio*, in token of a most firm conjunction between the man and wife, with a cake of wheat or barley. This, Blount tells us, is still retained in part with us, by that which is called the *bride-cake* used at weddings.'—Brand's *Popular Antiquities*. The old English and also Scottish custom of breaking a cake over the head of the bride on entering her new dwelling, perhaps points to a usage of the most remote antiquity—the sprinkling with wheat as a token of plenty. In modern times, the *bride-cake* is often a stately piece of confectionery, consisting of a rich cake as a basis, on which is reared a castellated structure with various fanciful devices, the whole being covered with a preparation of white sugar. This fabric is cut up and given in pieces to the guests as part of the wedding jovialty.

BRIDEWELL.

BRIDEWELL, n. *brīd'wēl* [from *St. Bride's Well* in London, near which a palace was built, afterward turned into a hospital, and finally into a place of punishment]: a house of correction; a place where criminals are confined.

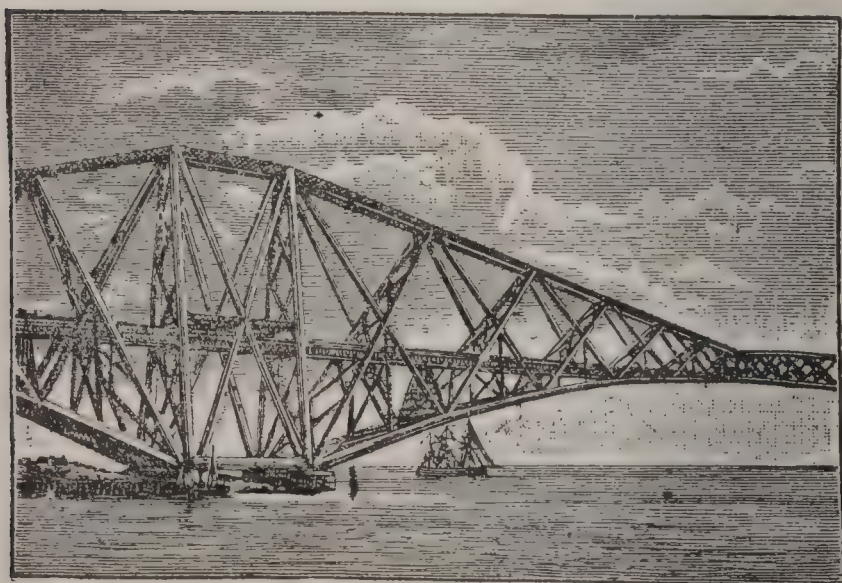
BRIDEWELL: a wall between Fleet street and the Thames, dedicated to St. Bride, which has given its name to a palace, parish, and house of correction. A palace, described as 'a stately and beautiful house,' was built here, 1522, by Henry VIII., for the reception and accommodation of the Emperor Charles V. and his retinue: and King Henry himself also often lodged here, as, for instance, 1525, when a parliament was held in Blackfriars; and 1529, the same regal personage and his queen Catharine, lived in the B. while the question of their marriage was argued. In 1553, Edward VI. gave it over to the city of London, to be used as a workhouse for the poor, and a house of correction 'for the strumpet and idle person, for the rioter that consumeth all, and for the vagabond that will abide in no place.' Queen Mary having confirmed the gift, it was formally taken possession of in 1555, by the lord mayor and corporation. The B. was afterward used for other persons than the class above named, and at last became a place of punishment, as it now is. As a house of correction, it is not under the sheriff's charge, but is governed by a keeper wholly independent of that officer. See **CORRECTION, HOUSE OF**.



New Suspension Bridge, Chelsea, England.



Croyland Bridge in 1790.



One of the Cantilevers of the Forth Bridge.

BRIDGE.

BRIDGE, n. *brýj* [AS. *bricge*; Icel. *briggja*; Ger. *brücke*, a bridge]: a roadway over an arch or arches or on beams, etc., spanning a river, a valley, etc.; the part of a stringed instrument over which the strings are stretched; upper part of nose: V. to stretch a roadway across, as over a river. **BRIDG'ING**, imp. **BRIDGED**, pp. *brýd*. **BRIDGE'LESS**, a. without a bridge. **DRAWBRIDGE**, a short roadway over a ditch or water that may be drawn up or swung aside temporarily. **FLYING-BRIDGE**, a temporary bridge or floating structure made over a stream. **PONTOON-BRIDGE**, a temporary bridge across a stream, made upon floating bodies. **SUSPENSION-BRIDGE**, a floor or passageway hung on two or more wire cables or chains, and stretching from bank to bank of a river, or from pier to pier. **TUBULAR-BRIDGE**, an enormous tube, or series of them, formed of wrought-iron plates, and supported upon piers, the roadway being in the interior. **SWING-BRIDGE**, a bridge which moves on a central pier, moved or swung aside to allow the passage of vessels. **BRIDGE'-BOARD**, in *arch.*, a notched board on which the ends of the steps (technically the treads and risers) of wooden stairs are fastened; a notch-board.

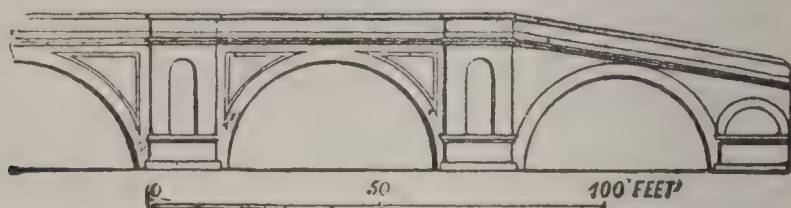
BRIDGE: structure for bearing a road over a stream, river, ravine, low ground, etc. A bridge for bearing a canal or other water-course, is called an aqueduct (q.v.); one for carrying a railway is sometimes called by the recently coined, though not very correct, word *viaduct* (q.v.). Bridges are formed of stone, brick, cast-iron, or timber arches; of timber beams or frame-work, supported on piles or on masonry; of iron rods or chains, in which case they are called suspension-bridges; of lattice-work; or of cast or wrought iron girders. Sometimes a combination of beams and suspension-rods is used. Of late years, the plan of tubular or hollow wrought-iron girders has been frequently and successfully employed, the first great example being the Britannia Bridge (q.v.).

Bridges are either fixed or movable. Of movable bridges there are various kinds. *Flying-bridges* and *floating-bridges*, are, in fact, mere ferry-boats (see **FERRY**) with gang-ways attached, and other provisions for safe and ready transport, and which are drawn across the stream by ropes. *Draw-bridges* and *swing-bridges* are constructed in two parts, that turn on pivots—the parts are either lifted vertically, or moved round horizontally. A *sliding-bridge* runs backward and forward on wheels or rollers. Another kind is much in use in low districts like Norfolk, Eng., where the water flows lazily, and almost on the land-level. These are sometimes called pontoon-bridges, from the movable roadway being balanced at a small height above the water level on a pivot working in a large pontoon or hollow cylinder sunk in the bed of the river—the ends of the roadway of the B., when laid across the river, resting freely on piers on either side. There are several such bridges over the Ouse. The pivot is set in the centre of the stream, and, when necessary, the B. is turned round on it by machinery, till it lies parallel to the banks, and permits the passage of barges on either

BRIDGE.

side. In a flat district, these bridges are exceedingly appropriate. See also **BRIDGE, MILITARY**.

The most rudimentary form of a B. may be assumed to be a series of stepping-stones, such as are yet almost everywhere to be found on river-courses at some point. It would naturally occur to give greater security to the passage, by laying planks or trees across the stepping-stones, so as to avoid the risks attending stepping or leaping from the one to the other. In this arrangement is the suggestion both of piers and of roadways; and beyond this stage, the art seems not to have advanced for a very long period. From the Greeks, we have accounts of bridges built by Semiramis, Darius, Xerxes, and Pyrrhus; and in Egypt, necessity early compelled the formation of bridges in connection with the canals constructed for the purposes of irrigation. But all these were probably rudimentary in form, consisting simply of piers, with the intervals between them spanned by beams of timber or large flat stones. Sometimes boats moored in the stream served the purpose of piers, as was the case with the famous B. of Xerxes across the Hellespont. Bridges of boats are in use to this day. The principle of the arch was known long before it was applied to the art of B. building: see **ARCH**. That application is attributed to the Romans, whose first great work in which the arch was employed, the Cloaca Maxima (q.v.), is referable to the time of the Tarquins. The Ponte de Rotto, or Senators' B. (B.C. 127), erected by Caius Flavius, appears to have been the first instance of its application to bridges. In the course of the



Ponte de Rotto.

great engineering undertakings of the Roman empire under Augustus Cæsar for the formation of roads and supply of water to Rome, its application became general; and afterward the empire having extended its bounds, the necessity for ready communication between its provinces led to the erection of numerous splendid bridges therein, many of which, indeed, surpassed in their greatness those of Rome itself. But though the Romans have unquestionably the merit of having originated the art of B.-building proper in Europe, yet it is doubtful whether the principle of the arch was not applied by eastern nations to B.-building, long before the dawn of the greatness of the Roman empire. The Chinese are said to have been before the west in this as in other arts, though the antiquity of some of the bridges on which this assertion is rested may well be doubted, considering the uncertainty which pervades Chinese chronology.

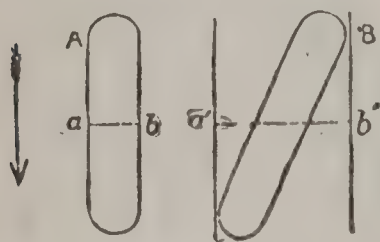
For a long time after the decay of the Roman empire, the art of bridge-building made no progress. It revived in the

11th c., but again languished to the beginning of the 18th, when the formation of the corps of the Ponts et Chaussées in France favored its further growth. Henceforth, many superb bridges were erected in Britain and on the European continent. In 1775, Mr. Pritchard of Shrewsbury, introducing the use of cast iron in the erection of bridges, originated a valuable style of construction. The genius and works of Telford bring us to the present time. Within half a century, the use of steam, the development of the canal system, and the necessity especially for railway-bridges with the immense amount of capital at the disposal of engineers for purposes of B.-building, have caused a rapid evolution of all the principles and possible modes of the art. Among the new forms within the century, are the suspension B., the wrought-iron girder and tubular bridges, and the lattice-bridges. Several of the new bridges over the Thames are models of engineering skill and taste. The Menai and Britannia bridges were regarded, when erected, as marvels. In America are many great bridges, notably the B. connecting New York and Brooklyn, opened 1883, one of the grandest works in the world. The highest bridge in the world 's at Gorabit, Cantal, France, 1,880 ft. long and 413 high. The variety of complex structures of wood and of iron that now span streams and hollows is endless. For some of the more important forms, see FRAME, LATTICE, TUBULAR, and SUSPENSION BRIDGES. What follows here, relates chiefly to arched or masonic bridges, and is confined to the more general and obvious conditions which such bridges must fulfil, avoiding the mechanical theory of their stability as too abstruse for popular exposition.

A an arched B. rests between masses of masonry on opposite sides of a river, called its *abutments* (q.v.). The intermediate points of support of the arches are the *piers* (q.v.), which are rarely built so strong as to be able of themselves to resist the lateral thrust of the arches resting on them, if the thrust of one arch did not counteract that of another. The arch itself is the curved construction between adjacent piers. The chief terms used in speaking of the arch itself are explained under ARCH. In addition may be noticed the *spandril*, the name given to the filling in above the extrados to the roadway. The *chord* or *span* is the distance between the piers; while the *rise* of the arch is the perpendicular distance between the level of the springing and the horizontal through the key.

When a B. is to be erected, the question of what form it should have is settled by a variety of considerations. Regard to appearance affects the question, but the material points are its sufficiency for its purposes, and its security and durability. The nature of the embankments and of the soil in the water-bed, together with the nature of the water-shed, or country drained by the stream, may make it necessary that the B. should not be an arched bridge at all, but a suspension or tubular bridge. But if it is to be arched, then the most important questions respect the number of its piers and the form of its arches. If vessels must be free to pass

under it, the arches must be lofty, and the abutments high; so also must they be if the river is exposed to sudden elevations by floods. Formerly, a prejudice existed against laying a B. across a stream at any other angle than at right angles to its course. The reason was, that, the theory of the skewed arch (q.v.) being unknown, the obliquity of the B. to the water-course involved a corresponding obliquity of its piers to the water, which greatly increased the risk of the B. suffering from floods. That the pressure of the current on piers increases with their obliquity to its course, may be seen at once from the annexed figures, which represent the same section of a pier set first, as in A, exactly up and down the stream, and next, as in B, obliquely to it. The mass of water which strikes B is equal in breadth to $a'b'$, the distance between lines through the extremities of B, parallel to the stream; while the mass which strikes A is in breadth only equal to ab , the thickness of the pier. But the skewed arch allows a B. to be thrown at any angle across a river, with its piers all parallel to the stream; and many an awkward turn in public roads would have been spared, had the skewed arch been earlier known.



After making allowance for the requirements of position and traffic, the form next must be considered, more particularly in relation to the stream. The stream affects the form, principally through prescribing the number of piers. Each pier takes up so much of the water-course, and thus narrows the effective passage of the water. The immediate consequence of narrowing the channel is to increase the velocity of the stream. As the velocity of the stream increases, it tends more and more to carry off the soil in the neighborhood of the piers, and finally, by deepening its course, to undermine them. From this consideration, the effect of too many piers will be obvious; but indeed this is not matter of speculation, for many bridges—among others, a B. of Smeaton's at Hexham—have been destroyed from this cause, thus falling from the very over-abundance of support! To know how many piers may with safety be used, the volume of water that flows through the channel, both ordinarily and in winter floods, must be ascertained, which can be done very nearly by calculating the mean of many soundings taken at different states of the river, and at a succession of points across its bed. There is another way in which the stream affects the form. If it be liable to floods, care must be taken to make the piers so high as to elevate the spring of the arches above the highest level attainable by the water. The annexed figure sufficiently shows how greatly the pressure of the

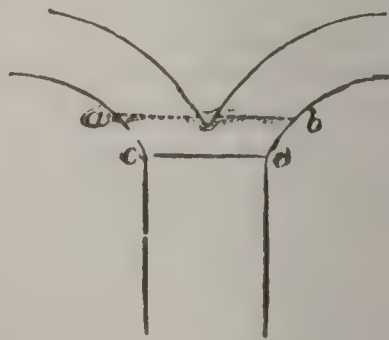
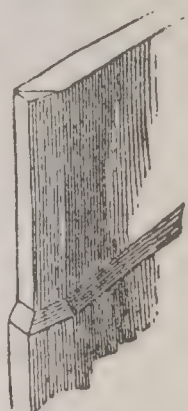


figure sufficiently shows how greatly the pressure of the

water on the B. increases whenever it reaches above the pier-head—the breadth above the springing, as at *abcd*, greatly exceeding the breadth of the pier itself. The arches must also afford passage for trees and other floating masses carried down by floods, since otherwise these would become powerful levers for the destruction of the bridge.

The form of the B. being determined, the remaining questions relate to its stability. This depends on the strength of the abutments and piers, and the balanced equilibrium of the arches. The importance of securing proper foundations for the abutments and piers cannot be overestimated, and very frequently their foundations, owing to the nature of the soil, have to be artificially constructed. See PILES: COFFER-DAM: CONCRETE. In considering the stability of the B., the first thing is to ascertain the forces which will act to destroy it. This is ascertained by calculating the extreme passing load, and also the weight of the structure above the arches, and of the arches themselves. A scientific and skilled engineer is then able to judge what amount of strain or destructive pressure will be exercised by these weights on the several parts of the structure, and thus to adapt the strength at every point to the strain. As to the passing load, it is usual to calculate on 240 lbs. per ft., superficial, of the whole area in ordinary bridges, and on 960 lbs. in railway bridges. The weight of the superstructure and arches is a question for practical measurement. As to the remaining pressure—viz., that of the stream—it must be ascertained for the highest floods. It is calculated from knowing the mean velocity of the stream, and the amount of surface exposed to it. The surface velocity is readily observed by means of floats; and when this is under 10 ft. per second, the mean velocity is found to be about one-fifth less. The stress of the stream on the bridge is diminished by the expedient known as a cut-water, which is an angular projection from the pier, as shown in the annexed figure. The best form for a cut-water has practically been ascertained to be an equilateral prism, presenting an angle of 60° to the water-course. In all bridges, these are to be found on the sides of the piers fronting against the stream; and in tidal rivers, they are built on the lower side as well.

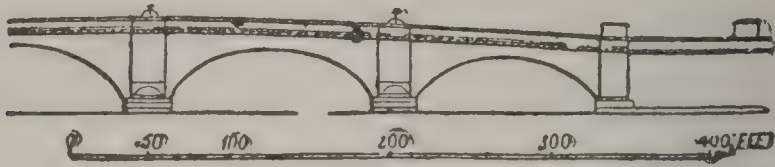


After the conditions already mentioned are satisfied, taste has more to do with the form of the arches than anything else. The forms in use are the old semicircular, the elliptical—usually produced by putting together several circular arches of different radii—and the segmental arch. The semicircular arch was almost exclusively used in the more ancient bridges. This arch is the most solid and most easily constructed, as all the voussoirs may be worked from the same mold. It requires, however, high banking, as its height is equal to half its breadth; and where the water-level greatly changes, it is particularly unsuitable, from the great height necessary to be given to the piers, to carry the intrados out of water-reach. The elliptical arch and the

BRIDGE.

segmental arch of 60° are, besides, more pleasing in appearance.

In possible extent of span, the masonic bridge is far exceeded by suspension and girder bridges. At Chester there



Elliptical Arches—London Bridge.

is a stone arch with a span of 200 ft.; in the Britannia Tubular bridge the span is 460 ft.; in the suspension bridge over the Menai Strait, 600 ft.; in the suspension-bridge at Freiburg, Switzerland, 870 ft.; in the Brooklyn bridge (suspension) 1,595 ft. 6 in. The railway bridge of iron girders, across the Tay near Dundee, was 3,450 yards in length, and 90 ft. above high-water. Great part of it was thrown down in 1879; but steps were taken to have it rebuilt at a lower elevation. See TUBULAR BRIDGE: SUSPENSION BRIDGES.

The principal objection to the wooden B. is its liability to decay, besides which it is liable to warping. The latter objection applies also to iron bridges; but in their case, the contractions and expansions from heat and cold may be compensated for, as in the compensation-balance of a watch.

See ROAD.

Of the more important bridges in Europe and America, some are remarkable for general excellence from an engineering point of view; others for special reasons—as for length of the whole structure, number and length of openings, height of arch, and length and number of spans, etc. Among those noted for length of the entire structure may be mentioned the following, of iron:

Bridge over the Mississippi, Dubuque	1,758 ft.
“ “ “ Vistula, Dirschau	2,750 “
“ “ “ Mississippi, Quincy	3,200 “
“ “ “ Missouri, Omaha	2,790 “
“ “ “ Rhine, Mayence	3,380 “
“ “ “ St. Lawrence, Montreal	6,600 “
“ “ “ Delaware in Pennsylvania	4,920 “
“ “ “ Hudson at Poughkeepsie	4,575 “

Of bridges noted for the number and length of their openings, may be mentioned the following, of wood:

Bridge over the Susquehanna at Columbia, 29 openings, each	200 ft.
Bridge over the Delaware, on the Erie railroad, 2 openings, each	260 “
Bridge over the Msta, in Russia, 9 openings, each	200 “
“ “ “ Elbe, in Germany, 14 openings, each from	140 to 100 “

BRIDGE.

Of bridges noted for height of arch, may be mentioned the following, built of stone and brick:

Bridge over the Elster, in Germany.....	223 ft.
“ “ “ Goeltz Valley, in Germany.....	256 “
“ “ “ Riofredo, in Germany.....	197 “
“ at Kalte Rinne, Austria.....	151 “
“ “ Camelle, in France.....	131 “

Of bridges noted for number and length of spans, may be mentioned the following, built of stone and iron:

Bridge at Glasgow, length of span.....	181 ft.
“ “ Wolmsdorn, Silesia.....	151 “
“ “ Omaha, 11 spans, length.....	2 800 “
“ “ Quincy, over the Mississippi, 17 spans, 2 of 250 ft., 3 of 200 ft., and 11 of 137 ft., and a draw span of 369 ft.	
“ “ Clifton over the Niagara river, from bank to bank, 1,190 ft.; between the points of suspension, 1,268 ft.; above the wa- ter 193 ft.	
“ “ St. Louis, 2 spans of 497 ft., 1 of 515 ft.	

A great number of bridges might be mentioned because of their general excellence from an engineering point of view. The following are a few:

The B. at St. Louis; tubular B. at Montreal; Britannia B. in Great Britain; B. over the Garonne, near Langon; over the Lek, Holland; over the Ohio, at Louisville; over the Rhine, near Griethausen; over the Dieppe, near Moerdyk, Holland; the Rhine B. at Cologne; B. at Marienburg, over the Nogat; over the Wye, near Chepstow, England; over the Boyne, at Drogheda, Ireland; over the Trent, at Newark, England; Blackfriars B., London; over the Eipel, Hungary; over the Rhine, at Strasburg; over the Saar, at Freibourg; over the Lahn, near Coblenz; over the Thames, at Windsor; over the Orne, France; over the Ohio, at Benwood; over the Hudson, at Poughkeepsie.

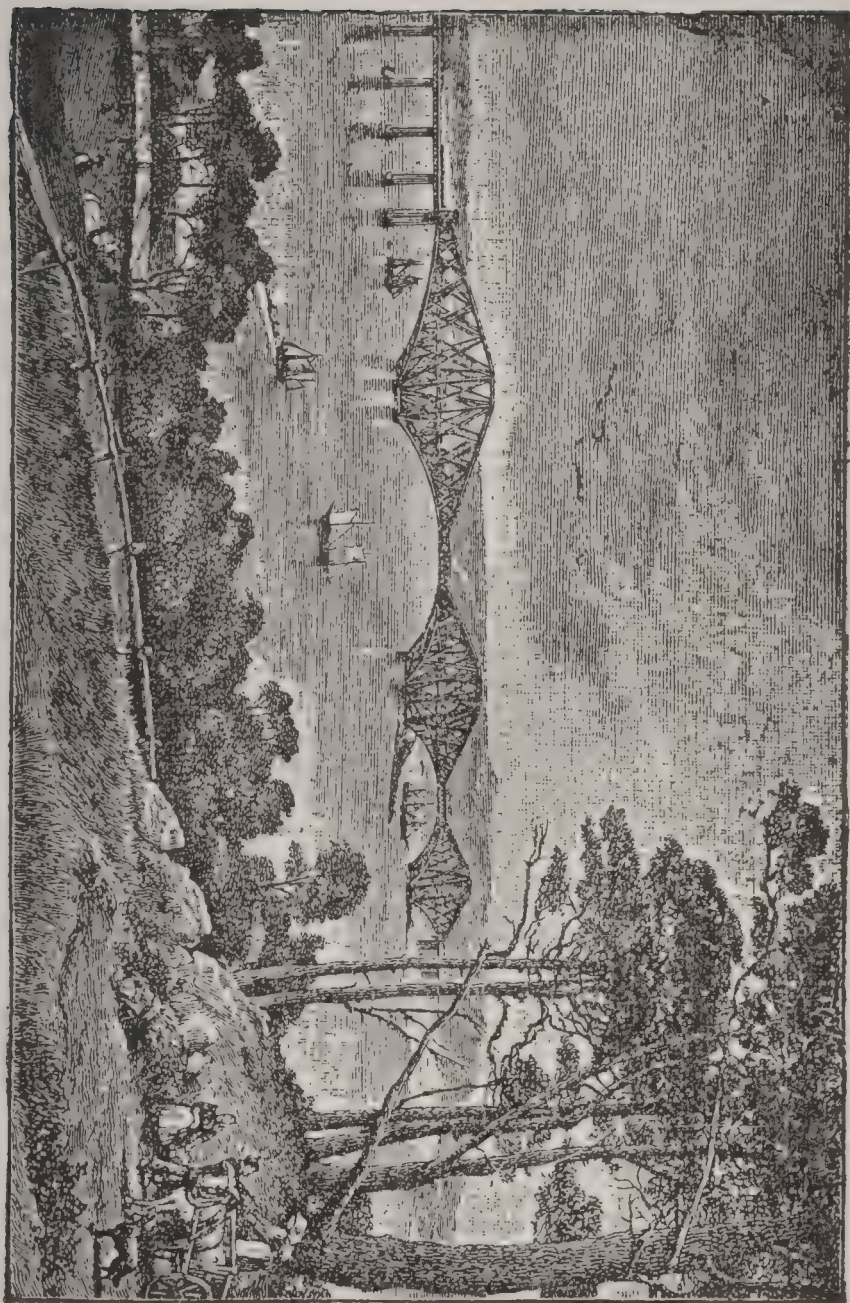
Some of the most important bridges ever constructed have been built within a few years past, or are now in process of construction. One is over the Douro river, at Bordeaux, finished 1886. The necessary extreme length of this B. is 1,278 ft., and it has only one span. The outward thrust of the enormous arch is tremendous, and the height of the arch, 240 ft. above low water, offers an immense leverage for high winds. The span of the arch is the greatest in existence, 566 ft. The thickness of the arch at the key is 26 ft., about $\frac{1}{3\frac{1}{2}}$ of the span, and the thickness increases downward until it reaches 55 ft. at the piers.

Over the Forth, at Queensferry, near Edinburgh, is now being built one of the most remarkable bridges in the world. A suspension bridge was begun here 1878, but when the Tay disaster occurred, the work was abandoned and recommenced on the cantilever plan in 1883. The breadth of the Forth at Queensferry is rather more than a mile, but as the viaduct is continued over land on the end shores for several hundred yards, the whole length of the bridge is about one

BRIDGE.

mile and a half, including two 1,700 ft. spans, two 675 ft. spans, the shoreward halves of the downward cantilevers, fifteen 168 ft. spans and five 25 ft. spans. The clear headway under the centre of the bridge is 150 ft. above high water. The three main piers of the structure are known respectively as the Fife pier, the Inch-Garvie pier, and the Queensferry pier, upon each of which is built a huge cantilever. The piers comprise four columns carried down to the rock, one of them more than 90 ft. below high-water. The caissons are filled with concrete up to low-water mark above which cylindrical masonry piers, 55 ft. in diameter at the bottom, and 36 ft. high, are carried up, forty-eight heavy steel bolts holding down the bed-plates and the superstructure of the main spans. One of the leading features in the design of the superstructure is the tubular struts of hitherto unequalled length, of which nearly six miles are required for the completed bridge, some of which are 12 ft. in diameter. The whole work is on a magnificent scale and is being carried out with much skill. This bridge was completed in 1890 at a cost of \$13,000,000.

During the last 60 years many suspension bridges have been built in Europe and the United States. The first one of importance was erected over the Ohio at Wheeling, 1848, and was broken down by the wind in 1854. Its span was 1,010 ft. The Bellevue bridge at Niagara, built 1848, had a span of 759 ft. This was removed in 1854 and its cables incorporated in another bridge constructed by John A. Roebling, whose name is now familiar to most Americans as the builder of the B. at Niagara, the one at Cincinnati over the Ohio, and as the designer of the East River bridge between New York and Brooklyn. The last named—the Brooklyn B.—is the most celebrated finished structure of this class. The site was selected, and plans and estimates prepared, as early as 1865. The Bridge company was organized 1867, with a nominal capital of \$5,000,000. In 1875 the bridge was made a state work, and placed in charge of a board of trustees. Mr. Roebling's first estimate made the cost of the bridge \$7,000,000, and that of the approaches \$3,800,000. The estimated time of construction was five years. A commission of bridge engineers approved his plans; congress passed an act authorizing the construction, and 1869, June, the sec. of war decided that 'it would not impede navigation provided five feet were added to the clear elevation proposed in the plans.' These requirements, together with an increase of five feet in the breadth, added 8 per cent. to the original estimates. Other changes in the design, which swelled the actual cost to nearly \$15,000,000, were the addition of solid masonry for the approaches, instead of iron trusses, and the sinking of caissons for the towers, instead of erecting them on a foundation of piles. There were many hindrances and delays in the work of construction. In addition to enormous technical difficulties, differences frequently occurred between the two municipalities of New York and Brooklyn, and occasionally appropriations were not granted in time, so that the work had to be suspended for long periods. The piers were built up



General View of the Forth Bridge (looking up the river).

BRIDGE.

by the aid of caissons of unprecedented size. The dimensions of the piers at the base are 140 by 59 ft. The New York tower was founded on the bed-rock, $78\frac{1}{2}$ ft. below the surface of the water. The Brooklyn tower was built up from the clay, $44\frac{1}{2}$ ft. below the surface. The lowering of the Brooklyn caisson began 1870, May, and was completed 1871, March. The New York caisson was towed into position 1871, Oct., and sunk to the rock by May following. The erection of the enormous towers was a work of time. They are each pierced by two archways $31\frac{1}{2}$ ft. wide, 118 ft. above high water. Through these openings passes the floor of the bridge. Above the arches, which are $120\frac{1}{2}$ ft. high, the partitions reunite, and the towers rise 30 ft. higher to support the saddles which sustain the cables. The total height of the towers above the surface of the water is 276 ft. The height of the bridge-floor over high water is 118 ft. at the piers, and 135 ft. in the centre of the span. The four cables are 16 inches in diameter, and contain about 5,000 single wires each. The wire is one-eighth inch size; 278 single wires were grouped into a rope and 19 ropes bundled to form a cable. The wires were carried forward and back from anchorage to anchorage over the piers. The sun expanding the more exposed wires, and the wind, rendered the work of forming the ropes with mathematical exactness exceedingly difficult. The work of stringing the wires began 1877, June, and was completed 1878, Oct. The iron saddles on which the cables rest are made movable to permit of expansion and compression on a saddle-plate of iron firmly imbedded and anchored in the towers. The saddles are 13 ft. long, 4 ft. broad and $4\frac{1}{2}$ ft. thick. They glide through minute distances in response to strains and changes of temperature, upon 40 iron rollers. The anchorages are 930 ft. from the towers on each side; they are solid masses of masonry, each 132 by 119 ft. at base and top, 89 ft. high, and weighing 60,000 tons. During the construction of the bridge, many accidents occurred. The compressed air of the caissons caused over 100 cases of caisson disease. The victim of the first accident was Engineer Roebling himself, who died from lockjaw resulting from a crushed foot received when laying the foundation of one of the shore-piers, 1869. His son, W. A. Roebling, took charge of the work, but in 1871 he was prostrated with a peculiar form of caisson-disease which weakened his nerves of motion. The total length of the bridge and approaches is 5,989 ft. Of this, the middle span takes 1,591 ft.; the distance between the towers and the anchorages on each side, 930 ft.; and the approaches $1,592\frac{1}{2}$ ft. on the New York and $972\frac{1}{2}$ ft. on the Brooklyn side. The length of the suspended structure from anchorage to anchorage is 3,454 ft.; total weight 6,470 tons. The maximum load which it is designed to bear is 1,740 tons. The ultimate resistance is calculated at 49,200 tons. The bridge is divided into five avenues. The central one, $15\frac{1}{2}$ ft. in width, is the path for foot-passengers; the two outer ones, 19 ft. wide, are for vehicles. The others are laid with the rails for the passenger cars, which were drawn by an endless chain moved by stationary

BRIDGE.

steam-engines; the cars attached to the moving cable by means of a 'grip'; later were replaced by electricity.

A notable structure is the Niagara cantilever B., finished 1883, Nov. It is a double-track railroad bridge about 300 ft. farther up the stream than the railroad suspension bridge, and was built for the Michigan Central railroad. It is constructed on the new cantilever principle, which is that of a balanced beam. In the perfect cantilever represented by the bridge now building over the Forth, near Edinburgh, the diagonally braced frame of the cantilever is exactly poised on the upright iron columns in the centre. In the Niagara bridge the abutting bank is made use of to attach the shore-ends to a mass of masonry which counterpoises the extra weight of the river arms, and stays and anchors the entire structure; and the two arms of the cantilever are different in length and in details of construction. The cantilever type of high-level bridges is a development of the use of cast-steel, which combines with rigidity a tensile elasticity that enables it to resist lateral strains to a certain degree. Like the suspension-bridge, the cantilever span can be carried over places where, as in the Niagara chasm, it is impossible to erect temporary supports. The two gigantic steel towers which bear up the cantilevers of Niagara bridge are $132\frac{1}{2}$ ft. high and rest on stone piers, 39 ft. high. They are composed of four columns of plates and angles riveted together, braced with horizontal struts and ties. They converge upward with a batter of 1 in 24 in the direction of the length of the bridge, and 1 in 8 at right angles to the middle line of the bridge. The cantilevers are each 395 ft. in length. A space of 120 ft. between the river ends of the cantilevers is spanned by a girder resting on the extremities of the arms. The total length of the bridge is 910 ft. between the centres of the anchorage piers. The clear span between the piers is 470 ft. The height of the bridge is 239 ft. from the surface of the river to the rail. The cantilevers are composed of two trusses 28 ft. apart, having a depth of 56 ft. at the towers, 26 ft. at the extremities of the river arms, and 21 ft. at the shore-ends. The materials used are steel and wrought iron, the former for the towers and the lower chords, centre posts, and all the pins; and the latter for all the tension members. The lower chords and the centre posts are latticed channel-plates. The upper chords are heavy eye-bars. A compression member is packed between the chords of the shore-arms. The shore-ends of the beams are anchored to masonry abutments by short links which serve also as expansion-joints. Joints are provided also at the connection of the intermediate spans with the river ends, to allow for contraction and expansion due to changes of temperature. The floor-beams are wrought-iron plates and angles 4 ft. deep, riveted between the vertical posts. On these rest four lines of stringers consisting of plate-girders $2\frac{1}{2}$ ft. deep. The width of the floor is 32 ft., a plank walk and iron railing at the side of the tracks being supported by white-oak ties, one-half of which project beyond the tracks for the purpose. Each column of the towers stands on a limestone pier, 12 ft

BRIDGE—BRIDGE-BUILDING BROTHERHOODS.

square at the top, and battering 1 in 24. The piers are connected by walls $3\frac{1}{4}$ ft. wide at top. The courses of the piers are 2 ft. deep. The foundations are a solid mass of bowlders (béton), and cement 20 by 45 ft., and 8 ft. deep under each pair of piers. The anchorage piers are 11 by $37\frac{1}{2}$ ft. under the coping, and consist of blocks of masonry, each measuring 460 cubic yards, and weighing 1,000 tons, raised upon 12 iron plate-girders $2\frac{1}{2}$ ft. deep and 36 ft. long, resting in turn on 18 15-inch beams through which the anchorage rods pass in such a way that the pressure is distributed evenly over the entire mass of masonry. The maximum uplifting force of the cantilevers is 678,000 pounds, about 1-3 weight of piers. In 1903 there were several new bridges under construction over the East River.

BRIDGE, MILITARY: temporary construction, to facilitate the passage of rivers by troops, cannon, and military wagons. The most efficient are Pontoons (see PONTON); but there are many other kinds. A *bridge of boats* is formed by small craft, especially flat-boats, scows, etc., collected from various places up and down the river; trestles are placed in them to bring their tops to one common level: the boats are anchored across the river, and balks of timber, resting on the trestles, form a continuous road from boat to boat across the whole breadth of the river; the boats ought to be of such size that, when fully laden, the gunwales or upper edges shall not be less than one foot above the water. *Rope-bridges* are sometimes but not often used by military engineers. A *boat-and-rope bridge* consists of cables resting on boats, and supporting a platform or road of stout timber. A *cask-bridge* consists of a series of timber-rafts resting on casks; the casks are grouped together in quadrangular masses; at certain intervals timbers are laid upon them to form rafts, and several such rafts form a bridge; it is an inferior kind of pantoon-bridge. A *trestle-bridge* is sometimes made for crossing a small stream in a hilly country; it consists of trestles hastily made up in any rough materials that may be at hand, with planking or fascines to form a flooring, cables to keep the trestles in a straight line, and heavy stones to prevent them from floating. *Raft bridges*, consisting of planks lashed together, are easily made of any rough materials that may be found on the spot; but they have little buoyancy, and are not very manageable. A *swing flying bridge* consists of a bridge of boats, of which one end is moored in the centre of the river, and the other end left loose; this loose end is brought to the proper side of the river, the boats are laden, and they make a semicircular sweep across the river by means of rudders and oars, until the loose end of the bridge reaches the other bank. A *trail-flying bridge* is a boat or raft, or a string of boats or rafts, which is drawn across a river by ropes, in a line marked out and limited by other ropes.

BRIDGE, NATURAL: see NATURAL BRIDGE.

BRIDGE-BUILDING BROTHERHOODS (Fr. *Frères pontifes*; Lat. *Fratres pontifices*) religious societies that originated in the s. of France in the latter half of the 12th

BRIDGE-HEAD—BRIDGENORTH.

c. Their purpose was to establish hospices at the most frequented fords of large rivers, to keep up ferries, and to build bridges. The church during the middle ages regarded the making of streets and bridges as meritorious religious service. Whether or not the herdsman Benezet, subsequently canonized, was the founder or only a member of this fraternity, is as uncertain as the tradition which attributes to him the completion of the bridge over the Rhone at Avignon 1180. The fraternity was sanctioned by Pope Clemens III. 1189; its internal organization was similar to that of the knightly orders, and the members wore as their badge or insignia a pick-hammer on the breast. In France, they labored very actively, but were gradually absorbed into the order of St. John. Similar associations sprang up in other lands, under different names.

BRIDGE-HEAD, or **TÊTE-DE-PONT**, *tât-dê-pông*, in Military Engineering: fortified post intended to defend the passage of a river over a bridge. It is a field-work, open at the gorge or in the rear, and having its two flanks on the banks of the river. The most favorable position is at a re-entering sinuosity of the river, where the guns can work better with the supporting batteries opposite. Bridge-heads are usually



Bridge-head Defense Work.

temporary works, hastily constructed. Their most frequent use is to aid a retiring army to cross the river in good order, and to check an enemy pressing upon it. Openings are left to allow the retiring army, with guns and carriages, to file through without confusion, and parapets are so disposed as to flank and defend these openings.

BRIDGENORTH: town of Salop or Shropshire, on both sides of the Severn, 20 m. s.e. of Shrewsbury. It consists of an upper and lower town, connected by a bridge over the Severn. The larger part of the town is on the right bank, and is built on a sandstone rock 60 ft. above the river. The navigation of the Severn formerly employed many of the inhabitants, but the traffic is now mostly by railways. The town, anciently called *Bruges* or *Brug*, is said to be of Saxon origin. In the beginning of the 12th c., the Earl of Shrewsbury defended it unsuccessfully against Henry I. It was besieged in the same century by Henry II.; and during the civil wars it resisted the parliamentary forces for three weeks. A great portion of the town was on this

BRIDGE OF ALLAN—BRIDGET.

occasion destroyed by fire. It has carpet and worsted manufactories. Bishop Percy was born here. Pop. (1881) 5,890; (1891) 5,885.

BRIDGE OF ALLAN: see ALLAN.

BRIDGEPORT: a city of Conn., a port of entry; one of the capitals of Fairfield co.; on an inlet of Long Island Sound, at the mouth of Pequonnock river, 58 m. n.e. of New York and 18 m. w.s.w. of New Haven. It is the s. terminus of the Housatonic railroad to Pittsfield, Mass., and of the Naugatuck railroad to Waterbury. Also, it has lines of steamboats connecting it with New York. The harbor at the entrance of Pequonnock river is broad and safe. The city is built mostly on a plain on both sides of the river, the e. portion being designated East Bridgeport. On the w. side, back of the plain, rises Golden Hill, occupied by elegant residences. This commands delightful views of sound and shore. All of the city is modern and well built, the streets are shaded by trees, the residences are well provided with water and gas, and many of them with electric light. B. contains 25 churches, 5 national and 3 savings banks, a public library, an orphan asylum, and other public institutions. It has 3 fine parks, and a horse railroad connecting its extreme limits. Its public schools are not surpassed in the state. It is the third city in wealth and importance in Connecticut. Between 50 and 60 corporations, with aggregate capital of \$8,000,000, are doing business here. The prosperity of the city is derived chiefly from its manufactures of carriages, sewing machines, miscellaneous hardware, machinery, brass, and iron castings, leather, cartridges, hats, shirts, saddles, springs and axles, etc. Here are the large manufacturing establishments of the Wheeler and Wilson and Elias Howe sewing machines, with the Union Metallic Cartridge Co., Wood Bros'. Carriage factory, The New York Tap and Die Co., Glover Sandford & Sons' hat factory, and many others. The census of 1900 shows 832 manufactories; capital \$33,066,890; average number of hands employed 19,291, wages paid during the year \$9,123,790; value of products \$37,883,721. Pop. (1890) 48,866; (1900) 70,996.

BRIDGET, *bridj'ët*, SAINT (properly *Birgitta* or *Brigitte*): famous Rom. Cath. saint; abt. 1304–1373, July 23: b. Sweden, daughter of a prince of the blood-royal. At the age of sixteen she married Ulf Gudmarson, Prince of Nericia, a stripling of eighteen, by whom she had eight children, the youngest of whom, named Catherine, 1336–81, became *par excellence* the female saint of Sweden. Her husband and she now solemnly vowed to spend the remainder of their lives in a state of continence, and, to obtain strength to carry out their resolution, made a pilgrimage to the shrine of St. Jago de Compostella, in Spain. On their return, Ulf died, 1344, and B. founded about the same time the monastery of Wadstena, in East Gothland. Sixty nuns and twenty-five monks were its first inmates. They received the rule of St. Augustine, to which St. B. added a few particulars. They constituted a new order, sometimes called the order of St.

BRIDGETON—BRIDGETOWN.

B., or the Brigittines, sometimes the order of St. Salvator, or the Holy Saviour, which flourished in Sweden until the Reformation, when it was suppressed; but it still possesses some establishments in Italy, Portugal, and elsewhere. Subsequently, St. B. went to Rome, where she founded a hospice for pilgrims and Swedish students, which was re-organized by Leo X. After having made a pilgrimage to Palestine, she died at Rome on her return. Her bones were carried to Wadstena, and she herself was canonized 1391 by Pope Boniface IX. Her festival is Oct. 8. The *Revelationes St. Brigittæ*, written by her confessors, was keenly attacked by the celebrated Gerson, but obtained the approval of the Council of Basel, and has passed through many editions. Beside the *Revelationes*, there have been attributed to this saint a sermon on the Virgin, and five discourses on the passion of Jesus Christ, preceded by an introduction which was condemned by the congregation of the *Index*.

Not to be confounded with this Swedish saint is another St. Bridget, or St. Bride, as she is commonly called, native of Ireland, who lived in the last part of the 5th and beginning of the 6th c., and was renowned for her beauty. To escape the temptations to which this dangerous gift exposed her, as well as the offers of marriage with which she was annoyed, she prayed God to make her ugly in appearance. Her prayer was granted; and she retired from the world, founded the monastery of Kildare, and devoted herself to the education of young girls. Her day is Feb. 1. She was regarded as one of the three great saints of Ireland, the others being St. Patrick and St. Columba. She was held in great reverence in Scotland, and was regarded by the Douglasses as their tutelary saint.

BRIDGETON, *bridj'tun*: city, port of entry, and cap. of Cumberland co., N. J.; on both sides of Cohansey creek, 20 m. above its entrance into Delaware Bay. Steamboats can ascend the Cohansey to B., and a wooden draw-bridge connects the two divisions of the city. It is at the junction of the Vineland railroad and a branch of the West Jersey railroad; 38 m. s. of Philadelphia, 11 m. w.s.w. of Vineland. The Cumberland and Maurice River railroad connects it with Bay Side View, at the mouth of the Maurice river. B. contains a national bank, a public library, the West Jersey Acad., South Jersey Institute, 13 churches, glass-works, a rolling-mill, a nail-factory, an iron-foundry, and manufactures of leather, woolen goods, carriages, and machinery. Here are published 3 weekly newspapers, and 3 monthly magazines, one an agricultural journal. Pop. (1870) 6,830; (1880) 8,722; (1890) 11,424; (1900) 13,913.

BRIDGETOWN: capital of Barbadoes (q.v.): on the w. coast of the island along the n. side of Carlisle Bay, which forms its roadstead; lat. 13° 4' n., long. 59° 37' w. It was founded about the middle of the 17th c., taking the name Indian Bridge, and later its present appellation, from a rude aboriginal structure which spanned a neighboring creek. The present city, however, is much more recent, the former having been almost destroyed by fire 1766, May. In 1831,

BRIDGEWATER.

a part of B. was destroyed by a hurricane, and in 1845, it again suffered severely from fire. It is the residence of the bishop of Barbadoes and of the gov.gen. of the Windward Islands. Except Broad street, the thoroughfares are irregular, and the shops or general stores, having no windows in front, look heavy and unattractive. There is considerable trade. Pop. 21,384.

BRIDGEWATER: a town (inc. 1656, June 3) in Plymouth co., Mass., on the Old Colony railroad; 32 m. n. by e. from Fall River. It has extensive manufactures of cotton, iron, paper, augers, etc., and a specialty in the manufacture of cotton-gins. Two important educational institutions, the B. State Normal School and the B. Academy, also a savings bank, a weekly newspaper, and the state workhouse, are in B. This old town once formed part of Duxbury; three new townships have been separated from it, incorporated as East B., North B. (now Brockton, q.v.), and West B. Pop. (1900) 5,806.

BRIDGEWATER: town and port of Somersetshire, Eng., on both sides of the Parret (here spanned by an iron bridge), 6 m. in a direct line, and 12 by the river, from the Bristol Channel, 30 m. s.w. of Bristol. It stands on the border of a marshy plain between the Mendip and Quantock Hills, but the country around is well wooded. It is chiefly built of brick. St. Mary's Church has a remarkably slender and lofty spire. The Parret admits vessels of 200 tons up to the town; it rises 36 ft. at spring-tides, and is subject to a bore or perpendicular advancing wave, 6 or 8 ft. high, often causing much annoyance to shipping. Bath or scouring bricks, peculiar to B., are made here of a mixture of sand and clay found in the river. Admiral Blake was a native of this town. It suffered severely in the civil wars, when it was besieged by Fairfax, and ultimately forced to surrender, the castle being dismantled by the conqueror. The unfortunate Duke of Monmouth was proclaimed king by the corporation of B., before the battle of Sedgemoor, 1685, 5 m. s.e. of B., in which he was defeated by the royal army. In 1880, 143 vessels, of 9,099 tons, belonged to the port; and in the same year the number of vessels that cleared the port was 4,227, with an aggregate burden of 237,395 tons. Pop. (1881) 12,024; (1891) 12,436.

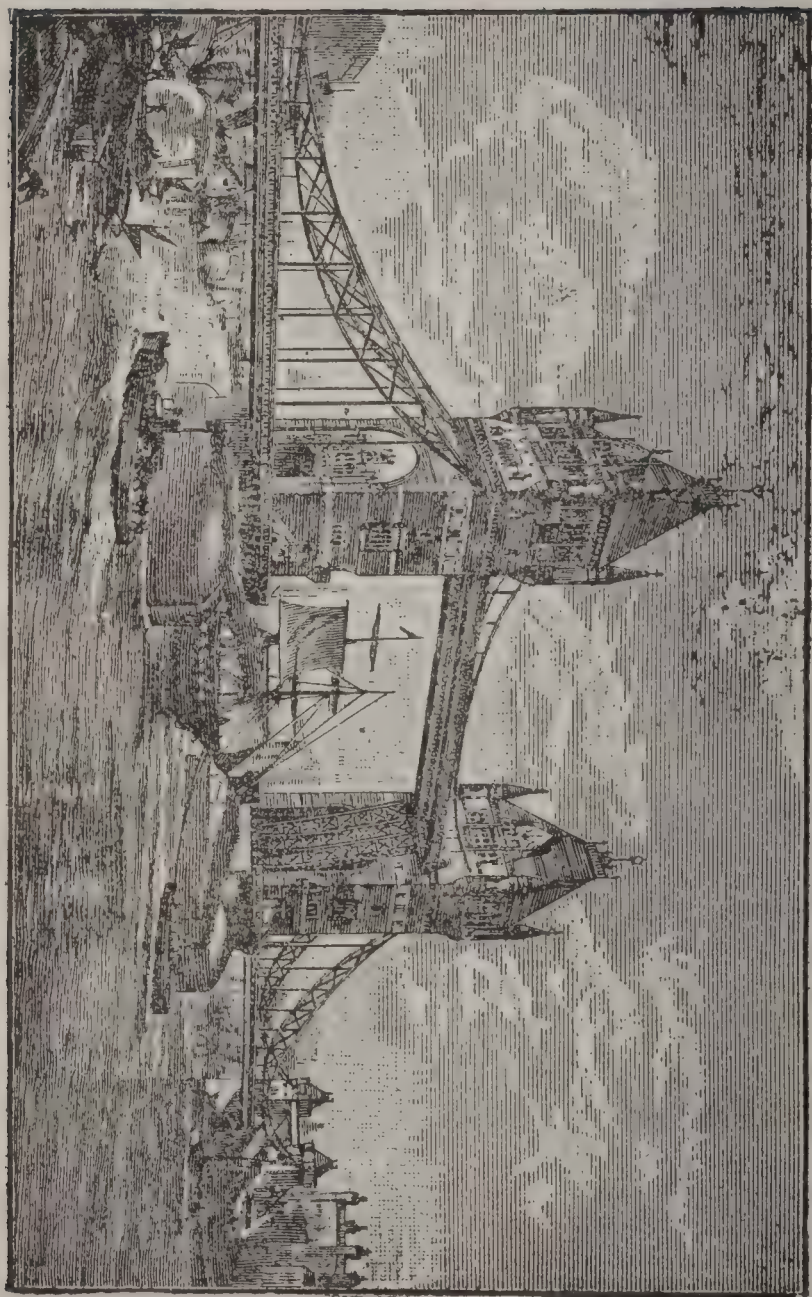
BRIDGEWATER, FRANCIS EGERTON, Duke of, styled the 'Father of British Inland Navigation: 1736-1803, Mar. 8; youngest son of Scroop, fourth Earl and first Duke of B.; succeeded his elder brother, second duke, 1748. In 1758-60, he obtained acts of parliament for making a navigable canal from Worsley to Salford, Lancashire, and carrying it over the Mersey and Irwell Navigation at Barton by an aqueduct 39 ft. above the surface of the water and 200 yards long, thus forming a communication between his coal-mines at Worsley and Manchester, on one level. In this great undertaking he was aided by the skill of James Brindley (q.v.), the celebrated engineer, and expended large sums of money. He was also a liberal promoter of the Grand Trunk Navigation; and the impulse that he thus gave

BRIDGEWATER—BRIDGEWATER TREATISES.

to the internal navigation of England led to the extension of the canal system throughout the kingdom. In politics, though not active, B. was a friend to the Pitt administration, and a contributor to the Loyalty Loan of no less than £100,000. He died unmarried and with his death the dukedom became extinct. Before he began to realize profits from his great work, B. lived in privacy, and restricted himself to the simplest fare; and after his death his great wealth was distributed among collateral branches of his family. A monument was erected to his memory in Manchester.

BRIDGEWATER, FRANCIS HENRY EGERTON, Earl of: d. 1829, Feb.; son of John Egerton, Bishop of Durham, grandnephew of the first Duke of B.; succeeded his brother as eighth earl, 1823, Oct. 1. Educated for the church, he had previously been prebendary of Durham. He died unmarried, and the title became extinct. By his last will, 1825, Feb. 25, he left £8,000, invested in the public funds, to be paid to the author of the best treatise 'On the Power, Wisdom, and Goodness of God, as manifested in the Creation,' illustrating such work by such arguments as the variety and formation of God's creatures in the animal, vegetable, and mineral kingdoms, the effect of digestion, the construction of the hand of man, and by discoveries, ancient and modern, in arts, sciences, and the whole extent of literature. The then president of the Royal Soc. of London, Davies Gilbert, to whom the selection of the author was left, with the advice of the Abp. of Canterbury, the Bp. of London, and a noble friend of the deceased earl, judiciously resolved, that instead of being given to one man for one work, the money should be allotted to eight different persons for eight separate treatises, all connected with the same primary theme (see BRIDGEWATER TREATISES). B. also left upward of £12,000 to the British Museum, the interest to be employed in the purchase and care of MSS. for the public use.

BRIDGEWATER TREATISES: eight celebrated works 'On the Power, Wisdom, and Goodness of God,' by eight of the most eminent authors in their respective departments, published under a bequest of the last Earl of Bridgewater (q.v.), whereby each received £1,000, with the copyright of his own treatise. They are: 1. *The Adaptation of External Nature to the Moral and Intellectual Constitution of Man*, by Thomas Chalmers, D. D. (Lond. 1833, 2 vols. 8vo). 2. *Chemistry, Meteorology, and the Function of Digestion considered with Reference to Natural Theology*, by William Prout, M. D. (Lond. 1834, 8vo). 3. *On the History, Habits, and Instincts of Animals*, by the Rev. William Kirby (Lond. 1835, 2 vols. 8vo). 4. *On Geology and Mineralogy*, by the Rev. Dr. Buckland (Lond. 1837, 2 vols. 8vo). 5. *The Hand, its Mechanism and Vital Endowments, as evincing Design*, by Sir Charles Bell (Lond. 1837, 8vo). 6. *The Adaptation of External Nature to the Physical Condition of Man*, by John Kidd, M. D. (Lond. 1837, 8vo). 7. *Astronomy and General Physics, considered with Reference to Natural Theology*, by the Rev. William Whewell (Lond. 1839, 8vo).



The Tower Bridge, London.

BRIDLE—BRIDOON.

8. *Animal and Vegetable Physiology, considered with Reference to Natural Theology*, by Peter Mark Roget, M.D. (Lond. 1840, 2 vols. 8vo). All these works have been republished by Bohn.

BRIDLE, n. *brī'dl* [AS. *bridel*; F. *bride*, a bridle—from O.H.G. *brittil*, a bridle: Icel. *bitill*; Dan. *bidsel*, a bridle—Icel. *bitill* is apparently the dim. of *bit*, the curb]: the bit and reins by which a rider is able to guide and restrain a horse; any restraint or check; a curb; a piece in the interior mechanism of a gun which holds and covers; a piece of cable fastened to a swivel on a chain to enable a moored ship to veer about; in a *plow*, a sort of swivel at the end of the beam to which the horses are attached, which enables the plowman to regulate the depth and breadth of the furrow-slice. V. to put on a bridle; to restrain; to govern; to curb; to check. BRIDLING, imp. *brīd'ling*. BRIDLED, pp. *brī'dld*. BRIDLER, n. *brīd'ler*. BRIDLE-WAY, n. a horse-track.—SYN. of 'bridle,' v.: to curb; control; govern; check; restrain; subdue; repress; master.

BRIDLE, v. *brī'dl*, as in BRIDLE UP [in allusion to the position and motions of a horse's head with the reins drawn tight: Gael. *brùite*, grieved, offended]: to hold up and toss the head in anger, pride, or resentment.

BRIDLINGTON, *bēr'ling-tun*, or BURLINGTON: sea-coast town in the East Riding of Yorkshire (including Bridlington Quay, a port and bathing-place about 1 mile to the s.e.), 6 m. w. of Flamborough Head, 40 m. e.n.e. of York. B. is situated on a gentle slope in a recess of a beautiful bay. The country is hilly to the n. but subsides to the s. into a flat alluvial and fertile tract called Holderness. It has the aspect of an old town with narrow irregular streets. It has considerable trade in grain, also some soap-boiling and bone-grinding works. B. is supposed to have been the site of a Roman station. The Danes had strongholds in this vicinity nearly 300 years, and many conflicts between them and the Saxons and Normans occurred here. Great numbers of ancient tumuli or barrows remain. An Augustine priory of immense wealth, and which subsisted for 400 years, was founded here by a grand-nephew of the Conqueror, and obtained many privileges from Henry I., and from King John. Some parts of it remain. In 1643, Henrietta, queen of Charles I., landed here with arms and ammunition from Holland bought with the crown-jewels. Bridlington Quay has a chalybeate mineral spring, as well as an intermitting one of pure water. B. is noted for its chalk-flint fossils. In the lacustrine deposits near B. were found, some years ago, the bones of a large extinct elk, with branching horns, measuring 11 ft. from tip to tip. Pop. of B. (1891) 8,909.

BRIDOON, n. *brī-dón'*, or BRADOON, *bră-dón'* [F. *bridon*, a snaffle-bridle, a brake—from *bride*, a bridle—from O.H.G. *brittil*]: the snaffle and rein of a military bridle.

BRIDPORT—BRIEF.

BRIDPORT, *brīd'port*: town in Dorsetshire, in a vale at the confluence of the Asker and the Birt, or Brit, or Bride, 16 m. w.n.w. of Dorchester, 2 m. from the English Channel. It stands on an eminence surrounded by hills, and consists chiefly of three spacious and airy streets. The chief manufactures are ropes and cordage, besides twine, shoe-thread, fishing-nets, and sail-cloth. Shipbuilding is carried on to some extent. The vicinity is celebrated for its cheese and butter. B. was a considerable town before the Norman Conquest, and had a mint for coining silver. In 1873 there entered port 69 vessels, whose tonnage was reckoned 6,386; and there cleared 36 vessels of collectively 3,526 tons. On the coast near are sandy cliffs, 200 ft. high, abounding in fossils. Pop. of B. (1871) 7,670; (1881) 6,790; (1891) 6,511.

BRIE, *brē*: old district of France, between the Marne and the Seine, celebrated for its grain and cheese. Meaux is its principal town. It was subdued by the Franks, and became a part of the kingdom of Neustria. It was ruled by its own counts in the 9th c. In 1361 it passed to the crown. It is now comprised in Aisne and adjoining departments.

BRIEF, a. *brēf* [F. *bref*; OF. *brief*—from L. *brēvis*, short; Ger. *brief*, an epistle or letter]: short; concise: N. an abridged writing; an epitome; concise narrative of a case, with short written instructions to counsel in conducting the case before a court of law: its preparation tests the skill of the lawyer, as it requires careful arrangement, and compression, yet with no material omission. **BRIEF'LESS**, a. without a brief; having no clients, as a barrister. **BRIEF'LY**, ad. *-lī*. **BRIEF'NESS**, n. shortness; conciseness. **APOSTOLICAL** or **PAPAL BRIEF**, a letter on public affairs, addressed by the pope to a prince, a high official, or to religious communities, written on paper or smooth parchment, sealed with red wax, and impressed with the figure of the fisherman Peter in a boat. A *bull* is a more formal document, and issued only on important occasions, written on parchment, and with lead [L. *bullā*, a boss or ornament] or green wax, impressed with the fisherman's seal.

BRIEF, or **BREVE**, **PAPAL**: in the corrupt Latinity of the early ages, a short letter written to one or more persons (hence the German *brief*, a letter); now used to denote certain pontifical writings, which, however, do not receive their name from the brevity of the composition, but from the smallness of the calligraphy. The papal B. differs from the papal bull (q.v.) in several points. It gives decisions on matters of inferior importance, such as discipline, dispensations, release from vows, indulgences, etc., which do not necessarily require the deliberations of a conclave of cardinals. Still, it is not to be confounded with the *motus proprii*, or private epistle of the pope as an individual, as its contents are always official. His holiness speaks, as it were, with a kind of familiar parental authority, and the B. is consequently superscribed *papa*, while the person to whom it is addressed is addressed '*dilecte fili*' (beloved son). It is signed, not by the pope, but by the *Segretario*

BRIEG—BRIENNE-LE-CHATEAU.

de' Brevi, an officer of the papal chancery, with red wax, and only with the pope's private seal, the fisherman's ring; hence it concludes *Datum Romæ sub annulo piscatoris* (Given at Rome under the ring of the fisherman). It is written on paper, or, like the bull, on parchment, with this difference, that the bull is written on the rough side, and in ancient Gothic characters, while the brief is written on the smooth side, and in modern Roman characters.

BRIEG: town of Silesia, Prussia, about 27 m. s.e. of Breslau; on the left bank of the Oder, and on the railway between Breslau and Vienna, and is surrounded with walls which have been partly converted into promenades. The streets are wide and regular, and commercially B. is a thriving town, its manufactures including linens, woollens, cottons, hosiery, ribbons, lace, leather, and tobacco. The battle-field of Mollwitz (q.v.) lies a little w. of B. Pop. (1890) 20,154.

BRIEL, *brêl*, or **BRIELLE**, *bre-êl'*, or **THE BRILL**, *brîl*: fortified seaport town, on the n. side of the island of Voorne, s. Holland; near the mouth of the Maas, about 14 m. w. of Rotterdam, in lat. 51° 54' n., long. 4° 10' e. B. has a good harbor, and is intersected by several canals. The men of the place are busied chiefly as pilots and fishermen. B. may be considered the nucleus of the Dutch republic, having been taken from the Spaniards by William de la Marck 1572. This event was the first act of open hostility to Philip II., and paved the way to the complete liberation of the country from a foreign yoke. In 1585, B. was one of the towns made over to England as security for certain advances made to the states of Holland; it was restored to the Dutch 1616. B. was the first town of Holland which, without extraneous aid, expelled the French in 1813. The celebrated admirals De Witt and Van Tromp were natives of this place. Pop. (1879) 4,442. (1897) estimated at 5,000.

BRIENNE-LE-CHATEAU, *bre-ên' lêh-shâ-to'*, or, as it is now called, **BRIENNE-NAPOLÉON**, *bre-ên' nâ-po-lâ-ông'*: small town in the dept. of Aube, France, on the right bank of the river Aube, about 14 m. n.w. of Bar-sur-Aube. It is celebrated as the place where Napoleon I. received his earliest military education, he having entered the school here 1779, when he was 10 years old, and remained until 1784. It is also memorable for the battle fought here between the French and the allies 1814. On Jan. 29, Bonaparte, who had collected his forces in the vicinity of B., with a view to check the advance of the allies on Paris, attacked Blücher, who was stationed in the town, and drove him out with considerable loss. In the struggle, the town, built chiefly of wood, was almost reduced to ashes. On the 30th, the contest was renewed, and Blücher was forced to retreat to Trannes. On the following day, Napoleon deployed his forces in the plain between La Rothière and Trannes, and on Feb. 1, the corps of the Crown-Prince of Würtemberg and Count Giulay, and the Russian reserves of grenadiers, having joined Blücher, Prince Schwarzenberg gave orders to renew the combat. After a sanguinary struggle, during which Napoleon, feeling the importance of the contest, ex-

BRIENZ—BRIEUC.

erted all his influence over his troops, led several charges in person, and frequently exposed himself to danger, victory at length declared decisively for the allies at every point. During the night of Feb. 1, and the morning of the following day, the French troops retreated from B. The loss on both sides in killed and wounded was about equal, nearly 5,000. The allies took 9,000 prisoners, and 70 pieces of artillery. This victory opened the way to Paris, and led to the fall of the empire.

BRIENZ, *bre'ents*: town of the canton of Bern, Switzerland, beautifully situated at the foot of the Bernese Alps, on the n.e. shore of the lake of B., about 30 m. e.s.e. of Bern. Its cheese is held in high repute. Pop. 3,000.

The lake of BRIENZ, about 8 m. long and 2 wide, is formed by the river Aar, at the foot of the Hasli valley, and by the same river it discharges its surplus waters into Lake Thun. The lake is 1,850 ft. above the sea; its average depth is about 500 ft. but in some places it is said to have a depth of more than 2,000 ft. It is surrounded by high mountains, the principal of which is the Rothorn, from which splendid views of the whole range of the Bernese Alps are obtained. A small steamer plies daily on the lake between B. and Interlaken, touching at the celebrated Giessbach Fall every trip.

BRIER, or **BRIAR**, n. *brī'ēr* [AS. *brær*; F. *bruyère*, heather—from OF. *bruière*—from mid. L. *bruārīum* or *brugārīā*, barren land, a heath, heather—from Breton, *brûg*]: *originally*, a place thickly covered with heath, ferns, and thorny bushes; *now*, a prickly plant or shrub, as the *sweet-brier*; the sweet-brier is *Rōsa rubiginōsa*, and the dog-rose, producing the common hips, is *Rōsa canīna*, ord. *Rosacēæ*. **BRIERY**. a. -*ī*, full of briers; thorny.

BRIERLY HILL: ecclesiastical dist. in Staffordshire, Eng., two m. n.n.e. from Stourbridge; on the Oxford Worcester and Wolverhampton railway. It is a place of much activity, the district abounding in coal, iron, and fire-clay; and there are numerous collieries, large iron-works, glass-works, brick-works, and potteries. The manufacture of steam-boilers is extensively carried on. Pop. (1871) 11,046; (1891) 11,847.

BRIEUC, SAINT, *săng-bre-eh'*: seaport town, in the dept. of Côtes-du-Nord, France; on the right bank of the Gouet, about 2 m. from its mouth in the Bay of St. B., a part of the English Channel; lat. 48° 31' n., long. 2° 45' w. The town is said to owe its origin to an Irishman, St. B., who built a monastery here in the 5th c. St. B. has the ruins of an old tower that formerly defended the entrance to the river, but was partially blown up by order of Henri IV. 1598, and a cathedral, part of which dates from the 11th c. The ramparts were destroyed 1788, and their site has been converted into a pleasant promenade, terminating in a terrace that commands a fine view of the Channel. St. B. has manufactures of woolen stuffs, linen, cotton, leather, paper, etc.; it has also ship-building yards, and a trade in agricultural produce. Pop. (1881) 14,869; (1891) 19,948.

BRIG—BRIGADE MAJOR.

BRIG, n. *brĭg* [contr. of *brigantine* (see **BRIGANTINE**)]: a vessel with two masts, both square-rigged.

BRIG—BRIGANTINE: a brig is a square-rigged vessel with two masts. A brigantine, or hermaphrodite brig, is a two-masted vessel, with the mainmast of a schooner and the foremast of a brig. A brig's mainsail is the lowest square-



Brig.

sail on the mainmast, whereas the mainsail of a brigantine is a fore-and-aft sail like that of a schooner.

BRIGADE, n. *brĭ-gād'* [F. *brigade*—from It. *brigata*, a troop, a company]: a troop or set of people engaged in a common occupation, as, a fire-brigade, a life-saving brigade, etc.; a body of soldiers, whether of infantry or cavalry, consisting of several regiments, but of no fixed number: *V.* to form troops into brigades. **BRIGA'DING**, imp. **BRIGA'DED**, pp. said of certain battalions or regiments when placed in the same brigade. **BRIGADIER**, n. *brĭg'ā-dēr'*, or **BRIGADIER-GENERAL**, n. the officer who commands a brigade. **BRIGADE-MAJOR**, the staff-officer of a brigade.

BRIGADE, *brĭ-gād'*, in Military Service: group of regiments or battalions combined into one body. When a British army takes the field, it is customary for three battalions to form a *brigade*, and two brigades a *division*; and the B. is a temporary grouping, which can be broken up whenever the commanding officer thinks fit. The household troops, comprising the Horse Guards, Life Guards, and Foot Guards, are sometimes called the *Household Brigade*.

In the U.S. army, a B. is not so temporary, and is properly the body of troops commanded by a brigadier-general, comprising two or more regiments. Two or more brigades may form a division, and two or more divisions an army corps.

BRIGADE MAJOR: military officer who exercises duties in a brigade analogous to those of the adjutant of a regiment. He attends to matters of discipline, and to the

BRIGADIER-GENERAL—BRIGGS.

personal movements of the men. He conveys orders, keeps the rollster or roster, inspects guards and pickets, and directs exercises and evolutions.

BRIGADIER-GENERAL, or **BRIGADIER**: in the U.S. army, a military officer of a rank between col. and major-gen. (sometimes a col. or lieut.col. acts as commander of a brigade). In the British army this command and rank are only temporary.

BRIGAND, n. *brīg'ānd* [OF. *brigand*, a light-armed foot-soldier, in F., a brigand—from It. *briga*, strife: mid. L. *brigantini*, light-armed foot-soldiers: comp. W. *brigant*, a highlander]: one of a band of robbers, usually inhabiting mountainous districts; a freebooter. **BRIG'ANDAGE**, n. -*ān-dāj*, thefts by organized and armed bands of men; robberies, often with violence and murder.

BRIGANDINE, n. *brīg'ān-dīn*, the old spelling of **BRIGANTINE** [F. *brigandine*]: in OE., a light kind of armor made up of many jointed and scale-like plates, sewed upon quilted linen or leather, and covered with a similar substance to hide the glittering of the metal. It formed a sort of coat or tunic. The B. was named from the *Brigans*, a kind of light-armed irregular corps, somewhat like the Cossacks and Bashi-bazouks of recent days, and, like them, addicted to marauding and pilfering: see **BRIGAND**.

BRIGAN'TES: see **BRITANNIA**.

BRIGANTINE, n. *brīg'ān-tīn* [It. *brigante*, a pirate; *brigandare*, to play the pirate at sea]: a light swift vessel, formerly used by pirates: see **BRIG**.

BRIGGS, *brīgz*, **CHARLES AUGUSTUS**, D.D.: theologian: b. New York, 1841, Jan. 15. He studied in the Univ. of Virginia 1857-60; in the Union Theol. Sem., New York, 1861-63; and in the Univ. of Berlin 1866-69. In 1870, he became pastor of a Presb. church in Roselle, N. J. He was made prof. of Hebrew at Union Theological Seminary 1874; prof. of Biblical theology 1891. At his entrance on the latter professorship, he pronounced an inaugural address which called forth severe criticism and dissent from many presbyteries throughout the country. He was arraigned before the presbytery of New York, 1892, Nov. 9, charged with heretical teaching on six points. The charges were: 1. That the human reason is a fountain of divine authority, which may and does savingly enlighten men, even such as reject the Scriptures as the authoritative proclamation of the will of God, and reject also the way of salvation through the mediation and sacrifice of the Son of God as revealed therein. 2. That the church is a fountain of divine authority which, apart from the Holy Scripture, may and does savingly enlighten men. 3. That errors may have existed in the original text of Holy Scripture as it came from its authors. 4. That Moses is not the author of the Pentateuch. 5. That Isaiah is not the author of half of the book that bears his name. 6. That the sanctification of believers is not complete at death. In the final vote, Dec. 31, he was acquitted on all the charges by varying

majorities. Appeal was taken to the general assembly, which, at its session at Washington, D. C., reversed the decision of the New York presbytery, and on June 1 suspended Dr. B. from the Presb. ministry.

BRIGGS, *brĭgz*, HENRY: 1556–1631, Jan. 26; b. Warleywood, near Halifax, Yorkshire, Eng.: mathematician. He studied at St. John's College, Cambridge. In 1596 he was appointed first reader in geometry at Gresham House (afterward College), London, and 1619 first Savilian prof. of geometry in Oxford. This office he retained till his death at Oxford. B. made an important contribution to the theory of logarithms, of which he constructed invaluable tables. Napier the inventor had, 1614, published a table of the so-called natural logarithms, when B. observed that another system, in which the logarithm of 10 should be taken as unity, would afford great facilities of calculation. Napier admitted the improvement on his own system, and intended to assist in carrying the plan into effect; but died 1618, when the whole work was left to B. In the same year he published his *Chilias Prima Logarithmorum*, containing the first thousand natural numbers calculated to eight decimal places, and in 1624 published his *Arithmetica Logarithmica*, the fruit of many years of unwearied application, and giving the logarithms of natural numbers from 1 to 20,000, and from 90,000 to 101,000, with fifteen places. His system of logarithms is now commonly adopted. Leaving others to carry out his calculations, for which he had provided every facility, he next employed himself on a Table of Logarithms of sines and tangents, carried to the hundredth part of a degree, and to fifteen places, which, with a table of natural sines, tangents, and secants, was posthumously published at Gouda, Holland, 1633, under the title of *Trigonometria Britannica*.

BRIGHAMIA: plants belonging to the lobelia family, natives of the Sandwich Islands. *B. insignis* bears an abundance of showy sweet-scented flowers, lasting several months. The juice is used as a specific for certain cutaneous diseases. It is a favorite in conservatories.

BRIGHT, a. *brīt* [AS. *beorht*; Icel. *biartr*, bright: Goth. *bairhts*, clear, manifest; *brait*, a large blazing fire]: shining; clear; illustrious; evident; clever; indicating success, as bright hopes or prospects: N. in OE., splendor. BRIGHT'LY, ad. *-lī*. BRIGHTNESS, n. lustre; splendor. BRIGHTEN, v. *brīt'n*, to make clear or shining; to increase the lustre of; to cheer; to clear up. BRIGHTENING, imp. *brīt'ning*. BRIGHTENED, pp. *brīt'nd*, made bright.—SYN. of 'bright': clear; lucid; luminous; vivid; splendid; brilliant; lustrous; shining; resplendent; effulgent; refulgent; radiant; glittering; sparkling; transparent: translucent.

BRIGHT.

BRIGHT, *brīt*, JOHN: English statesman and orator: 1811, Nov. 16—1889, Mar. 27; b. Greenbank, near Rochdale, Lancashire; son of Jacob B., a hand-weaver who settled at Rochdale 1802. The family had, several generations previously, embraced the tenets of the 'Quakers' or 'Friends.' B. was educated at the Quaker school at Ackworth. 1827, Feb., he entered his father's factory, and settled down to what was intended to be the business of his life. His inborn talent for oratory found vent in public speaking on temperance and other questions as early as 1830. In 1833 he visited the continent, and 1835 Egypt and Palestine. He took a warm interest in agitation for national education 1835, and was thus brought into contact with Cobden, beginning the warm friendship and close political alliance of many years. In 1839 he married Elizabeth, daughter of Jonathan Priestman of Newcastle-on-Tyne; but she died 1841. He came out of the gloom of this bereavement and threw himself energetically with Cobden into the agitation for the repeal of the corn laws. In 1843 he was returned to parliament from the city of Durham. After the successful close of the campaign against the corn laws, the bill limiting to 10 the hours of factory labor was strenuously opposed by B. on the plea of its interference with the principle of free contract; but it was carried and became a law 1847. In that year he was elected representative from Manchester, and applied himself to remedying the condition of Ireland, proposing the application of the principle of free trade to Irish land. In the same year he urged action to secure a supply of cotton from India. In 1849 he married again, his bride being Margaret E. Leatham, daughter of a Wakefield banker, by whom he had four sons and three daughters. B. ardently opposed war, and undauntedly set his face against the popular war with Russia, into which England drifted 1854. He appealed for peace 1855 in a speech of wondrous pathos, of which the passage has become classic beginning—'The Angel of Death is abroad in the land, methinks I hear the beating of his wings.' 1857, Mar., he was defeated for re-election at Manchester, but in Aug. was chosen by the electors of Birmingham. When the civil war broke out in the United States, B. at once took and steadfastly maintained the side of the national govt., and by his influence did much to hold the cotton-operatives firm in their noble patience under severe privation while the war lasted. 1865, Apr., Cobden died, and his long-time comrade delivered in the house a eulogy whose eloquence was heightened by emotion. B. now entered on the long contest for electoral reform which resulted at last in the act carried by the Tories granting practically household suffrage. In 1868 he became president of the board of trade in Gladstone's govt., and took part in the passage of acts disestablishing the Irish Church and appointing school boards throughout England. In 1870 ill health compelled his resignation; 1872 he reappeared in parliament; and 1873 he became chancellor of

BRIGHT.

the duchy of Lancaster. He returned to office with Gladstone 1880; but on the inception of the war with Egypt, 1882, he resigned, and to the end of his life maintained an independent attitude, strongly disagreeing, for instance, from his old leader, on the Irish Home Rule question. At his death, he who had been deemed by conservative minds a dangerous agitator had lived to see his cause repeatedly triumph in legislation which added strength to the nation; and his departure was amid the admiring regrets of friends and opponents.

John Bright was a man of strongly knit and robust frame, with a leonine head, to which, in his old age, the mane of snowy hair added a beautiful dignity. As an orator, he will rank among the very first of the 19th c. Homely, in the best sense, in his speech, he spoke as one saturated with the English of the Bible and Shakespeare. With great directness, with a moral earnestness which never descended from its native throne, with an occasional beam of lambent humor, with a wealth of picturesque and appropriate illustration and anecdote, he was a very prophet among statesmen. He used to speak in a deliberate and placid manner, his voice exquisitely modulated throughout its great compass, and he won his way speedily to the affections of his audience, and shook at will their very heartstrings.

BRIGHT.

BRIGHT, MARSHAL H.: born 1834, Aug. 18, Hudson, N. Y.: journalist. After a course at the scientific school of Harvard Univ. 1852, 3, he was employed as asst. editor of the *Albany Argus*. 1861, Oct., he was appointed on Gen. Robert Anderson's staff; and later held similar position under Gens. Sherman, Buell, Rosecrans, and George H. Thomas—attaining the rank of brevet-major. He became managing editor of the *Christian at Work*, New York, 1873; editor-in-chief 1880.

BRIGHT, brit, RICHARD, M.D.: 1789–1858: English physician; educated at Edinburgh Univ. where his instructors of general science were Dugald Stewart, Playfair, and Leslie. After spending two years at Guy's Hospital, London, he returned to Edinburgh and graduated 1813. In 1824 he was appointed a physician at Guy's Hospital, where he made those discoveries in renal disease (Bright's Disease) by which his name has become known. He published: *Reports of Medical Cases, selected with a view to illustrate the Symptoms and Cure of Diseases, by a reference to Morbid Anatomy* (1827–31, 2 vols.); *Diseases of the Brain and Nervous System* (1831).

BRIGHTENING, in Calico Printing: operation of rendering the colors of printed fabrics more bright or brilliant, by boiling them in solutions of soda and other materials.

BRIGHTON, Mass.: see BOSTON.

BRIGHTON, originally *Brighthelmstone*: town and watering-place on the coast of Sussex, 50½ m. s. of London. It is built on a slope ascending eastward to a range of high chalk cliffs; to the w. these hills recede from the coast, and leave a long stretch of sands. Anciently, Brighthelmstone was a mere fishing village on a level under the cliff. It was fortified by Henry VIII., and more strongly by Elizabeth; but the sea proved more dangerous than the French, and now washes over the site of the village of those days. The inroads of the sea in 1699, 1703, and 1705, undermined many cliffs and destroyed many houses. Its further inroads are prevented by a sea-wall of great strength (60 ft. high, 23 ft. thick at the base, and 2 m. long), extending along the cliffs, built at the cost of £100,000. The writings of Dr. Russel, a celebrated physician of George II.'s time, first drew public attention to B. as an eligible watering-place, and the discovery of a chalybeate spring in the vicinity increased its popularity. The visit of the Prince of Wales 1782, and his subsequent yearly residence there finally opened the eyes of the fashionable world to its immense attractions, and B. thenceforth became the crowded resort of a health-seeking population. Its progress has been very rapid, and the town is still steadily increasing. B. is for the most part extremely well built, as becomes a favored retreat of wealth and aristocracy. It consists mostly of new and elegant streets, squares, and terraces. The hotels are magnificent. A range of splendid houses fronts the sea for nearly 3 m., which length includes the famous sea-wall, and the beach is easily accessible by gaps in the chalk cliffs. Formerly, trees were a great rarity in B. but within the last 30 years they have been planted in and around the town, and are now of con-

BRIGHT'S DISEASE.

siderable size in the North Steyne Inclosures, the Level, and the Queen's Park,

Near the centre of the town is the Pavilion or Marine Palace, a fantastic Oriental or Chinese structure, with domes, minarets, and pinnacles, and Moorish stables, begun for the Prince of Wales 1784, finished 1827. It is now the property of the corporation of B., and with its fine pleasure-grounds of above seven acres, it is devoted to the recreation of the inhabitants. It stands in the Steyne, an open space between the e. and w. parts of the town. The Marine Parade, a fine terrace, extends about a mile along the margin of the cliff, between the Steyne and Kemp Town, a handsome district on the east. Westward, there is a similar parade or promenade, extending a great length in front of the more modern part of the town, and here there is daily a large and fashionable concourse. There are two piers—a chain pier on the east, opposite the Marine Parade, and a broad wooden pier on piles on the west; both are used for promenading. A magnificent aquarium, 715 ft. in length, was opened 1872. B. has no maritime trade. It is a town for recreation and sea-bathing. There is a want of trees to shade the promenades, the sea-breeze being adverse to their growth. B. has large public hotels, and many private hotels or boarding-houses, locally known as 'Mansions.' From its salubrity, the town abounds in boarding-schools, and has a very good public school. Living and house-rent are about a third higher than in London. The pop. is greatly increased during the fashionable season by the influx of visitors. B. returns two members to parliament. Pop. (1801) 7,333; (1851) 65,569; (1871) 92,469; (1881) municipal borough, 107,528; (1891) 115,402; (1901) 123,478.

BRIGHT'S DISEASE [named after the English physician, Dr. Richard B., who first investigated its character]: a serious disease of the kidney. The term, formerly much confused in its application, is now recognized as generic, including at least three different diseases of the kidney, accordingly as the malady originates in the uriniferous tubules, in the blood-vessels and particularly in the Malpighian tufts, or in the fibrous stroma. In the first case, the disease is *Inflammatory B. D.*; in the second, *Waxy B. D.*; and in the third *Cirrhotic B. D.*—*Inflammatory B. D.* is an affection, acute or chronic, of the kidney, caused often by exposure to cold, and by scarlatinal and other blood poisons. In the early stages, there are diminution of urine, albuminuria, frequently hematuria, tube-casts, and dropsy; in the later stages, these symptoms continue, and there are secondary changes in the heart, blood-vessels, and other organs. Recovery is not infrequent in the early stages, but rare in the later, death usually resulting from dropsy or uræmia.—*Waxy B. D.* is a chronic affection of the kidney, caused by phthisis, syphilis, and other exhausting conditions; it consists of a waxy degeneration of the Malpighian bodies and the small arteries, passing through various stages of transformation, and characterized by a large flow of albuminous urine and absence of dropsy;

BRIGITTINES—BRIL.

often there is waxy disease of other organs, particularly the spleen, liver, and intestinal canal. Recovery is rare. Death usually results from exhaustion, uræmia, or concurrence of disorders.—*Cirrhotic B. D.* is caused generally by the abuse of alcohol, sometimes by the poison of gout, occasionally by lead-poisoning, and by unknown conditions. It consists of an increase of the fibrous stroma, with thickening of the capsule and ultimate atrophy of the organ. It is characterized by a very insidious commencement, none of the symptoms of the other two forms being observable, and even the albuminuria being at first very slight or even non-existent. But later there appear enlargement of the heart, polyuria, and œdema of the lungs. The concurrence of these affections produces death. The diet during the earliest stages should be easily assimilable, and not too rich in nitrogenous elements. Milk is, as a rule, well borne. In the more advanced stages, the food should be of the most nourishing kind, and a moderate allowance of stimulants may be needed. See KIDNEYS: ALBUMINURIA.

BRIGITTINES: see BRIDGET, SAINT.

BRIGNOLES *brên-yol'*, or *brên-yôl'*: town in the dept. of Var, France, beautifully situated in a fertile valley, surrounded by forest-clad hills, and watered by a stream called the Calami; about 22 m. w.s.w. of Draguignan. B., which is a very salubrious place, has manufactures of broad-cloth, silk twist, soap, leather, pottery, etc.; and a trade in wines, brandy, olives, and prunes. Pop. (1886) 4,225.

BRIGNOLI, *brên-yô'lê*, PASQUALE: 1824–84; b. Italy. noted singer. He was early instructed in music, and wrote an opera at the age of 16. He sang with great success in the principal cities of Europe, and 1855 came to America, where he soon gained great popularity. In his best days his voice was a fine tenor. He sang with Madame Patti, when she first appeared in America; and later he supported La Grange, Nilsson, and other celebrities. Although he gained large sums of money he died poor.

BRIHUEGA, *bre-wâ'gâ*: town of New Castile, Spain 20 m. e.n.e. of Guadalajara; on the Tajuña. It was formerly surrounded by walls, of which traces remain. The remains of an old Moorish fortress now serve as a cemetery. B. has manufactures of woollens, linen, glass, and leather. Here, 1710, during the war of the succession, the English general Stanhope, owing to the dilatoriness of his allies in affording him support, was defeated by the Duke de Vendôme, and compelled to surrender, with all his force, amounting to about 5,500 men. Pop. 4,140.

BRIL, *brêl*, MATTHÆUS: 1550–84; b. Antwerp: Dutch painter. went in youth to Italy, and, under the patronage of Pope Gregory XIII., painted several frescoes in the Vatican. He was distinguished also as a historical and landscape painter.

BRIL, PAUL: 1554 (or 56)–1626; younger and more celebrated brother of Matthæus B: Dutch painter. He re-

ceived instructions under Matthæus in Rome, and soon excelled his master. His pieces were at first conceived in the fantastic style which then prevailed; but gradually his style increased in power and beauty, until it exerted a striking influence over landscape-painting. The works of his ripper age exhibit high poetical qualities, and a fine appreciation of the effects of light in the sky, which have been described as little inferior to those of his great successor, Claude Lorraine. They have a character of solemn rest and calmness, and at times even an elegiac tone of melancholy, which well accords with representations of the glories of fallen Rome. A collection of excellent landscapes by B. is found in the palace Rospigliosi in Rome, and two beautiful landscapes enrich the gallery of the Pitti Palace, Florence. Besides landscapes, B. painted scenes from biblical history; among them, the *Tower of Babel*, now in the Berlin Museum. Other pictures by B. are found in the galleries of Munich, Vienna, and the Louvre.

BRILL, n. *bril* [Corn. *brilli*, little spotted fishes—from *brith*, streaked, variegated], (*Rhombus vulgaris*): fish of the same genus with the turbot (q.v.), found in considerable abundance on some parts of the British coasts, and common in the markets of the larger towns; known also as the bonnet-fluke, or kite, or brett. It resembles the turbot more than any other British species of this genus, but is at once distinguished by its inferior breadth, which (excluding the fins) is only equal to half its entire length; by the want of tubercles on the upper surface; by a few of the most anterior rays of the dorsal fin being elongated beyond the membrane; and by the coloring, which is reddish sandy-brown on the upper side, varied with darker brown and sprinkled with white pearly spots, the under side being (as in the turbot) white. The B. is taken both in sandy bays and in deep water. Although considered very inferior to the turbot, it is yet much esteemed for the table. It seldom or never attains so great a size as the turbot, rarely exceeding 8 lbs. in weight.

BRILLIANT, a. *bril'yánt* [F. *brillant*, brilliant, bright—from *briller*, to shine: mid L. *berylläre*, to sparkle like a precious stone—from L. *beryl'lus*, a bright shining precious stone: It. *brillare*, to quaver with the voice]: sparkling with lustre; glittering; very splendid: N. the stone that glitters; a diamond cut flat on the face, and faceted on the sides and back, so as to refract the light and make it more glittering—see DIAMOND. A *rose diamond* is faceted on the surface, and flat on the back. BRILL'ANTLY, ad. *-lě*, very splendidly. BRILL'ANTNESS, n. BRILL'IANCY, n. *-sě*, great brightness.

BRILLS, n. plu. *brilz* [Ger. *brille*, spectacles]: the hair on the eyelids of a horse.

BRIM, n. *brim* [Ger. *brame*; Lith. *bremas*, border: Icel. *barmr*, the edge; *brim*, surf: M.H.G. *brēm*, border: AS. *brym* or *brim*, the surf, the surge—*lit.*, the line which separates the land from the sea]: the edge, rim, or border of any vessel or thing: V. to fill or be filled up to the edge or rim. BRIM'MING, imp.: ADJ. full to the top. BRIMMED, pp.:

BRIM—BRINDISI.

Adj. filled to the brim. **BRIM'LESS**, a. **BRIM'FUL**, a. *fúl*, full to the top or edge. **BRIM'MER**, n. a glass full to the rim or brim.—**SYN.** of 'brim, n.': border; edge; margin; brink; verge; rim.

BRIM, a. *brīm* [OF. *bramir*, to utter cries]: said of swine when in heat; same as **BREME**, which see.

BRIMSTONE, n. *brīm'stōn* [AS. *bryne*, a burning, and *stone*: Icel. *brennistein*, burning stone—from *brenna*, to burn; *steinn*, a stone]: a hard brittle substance of a yellow color; commercial name for sulphur (q.v.); reduced to powder by sublimation, it is called *flowers of brimstone*. **BRIM'STONY**, a. *ī*, containing brimstone.

BRINDED, a. *brīn'dēd*, or **BRINDLED**, a. *brīn'dld* [Icel. *brindlottr*, cross-barred in color—from *brandr*, a post or bar, a brand: It. *brano*, a bit: F. *brin*, a blade of grass]: streaked; spotted; colored in stripes.

BRINDISI, *brēn'dē-sē* (ancient *Brundisium*, or *Brundisium*): seaport town of s. Italy, province of Lecce; on a small promontory in a bay of the Adriatic Sea, about 45 m. e.n.e. of Taranto. B. is a city of very great antiquity. It was taken from the Sallentines by the Romans, B.C. 267, who some 20 years later established a colony here. The town, partly owing to the fertility of the country, but chiefly on account of its excellent port—consisting of an inner and outer harbor, the former perfectly landlocked, and capable of containing the largest fleets, and of easy defense on account of its narrow entrance, and the latter also very well sheltered—rapidly increased in wealth and importance. It soon became the principal naval station of the Romans in the Adriatic. B. was the starting-place, B.C. 230, of the Roman troops that took part in the first Illyrian war; and from this point the Romans nearly always directed subsequent wars with Macedonia, Greece, and Asia. And when the Roman power had been firmly established beyond the Adriatic, B. became a city second to none of s. Italy in commercial importance. Horace, who accompanied Antony in a hostile movement on B., B.C. 41, has made the journey the subject of one of his satires (*Sat.* i. 5). Virgil died here, B. C. 19, on his return from Greece. The city appears to have retained its importance until the fall of the empire, but it suffered greatly in the wars which followed. When the Normans became possessed of it in the 11th c., the Crusaders made it their chief port for embarkation to the Holy Land; but with the decline of the crusades, B. sank into comparative insignificance as a naval station. The city subsequently suffered greatly from wars and earthquakes. The principal buildings are the cathedral, where the Emperor Frederick II. was married to Yolanda 1225; and the castle, commenced by Frederick II., and finished by Charles V. The district around B. is still remarkable for fertility, olive oil being produced in large quantities. Some years ago, B. was constituted an entrepôt for foreign goods. Since the establishment of the overland route to India, B. has greatly increased, being the most convenient point of departure for the east from northern and central Europe. The extensive and

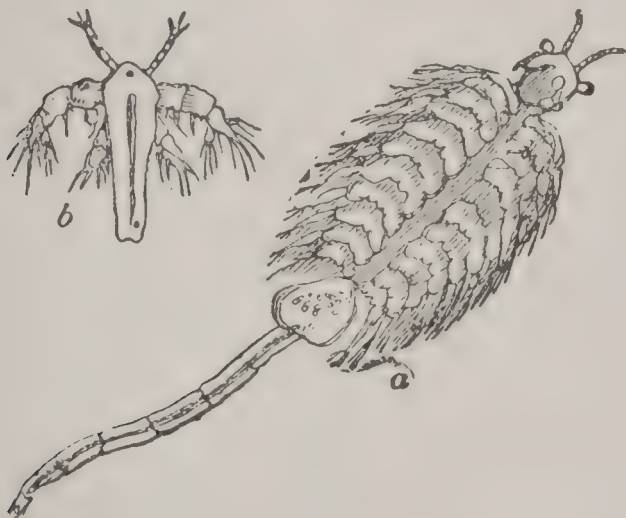
BRINDLEY—BRINE-SHRIMP.

well-sheltered harbor has undergone great improvement, and a substantial bulwark has been built across the n. arm to prevent it from being filled with sand. From 700 to 1,000 vessels annually enter the port. Pop. about 18,000.

BRINDLEY, *brīnd'li*, JAMES: 1716-72; b. Thornsett, near Chapel-en-le-Firth, Derbyshire, Eng.: mechanic and engineer. Apprenticed at 17 to a millwright, he afterward became an engineer, and in 1752 showed great ingenuity in contriving a water-engine for draining a coal-mine. A silk-mill on a new plan, and several others of his works, recommended him to the Duke of Bridgewater (q.v.), who employed him to execute the canal between Worsley and Manchester. Thenceforth he devoted his great skill to the construction of navigable canals; commenced the Grand Trunk, and completed the Birmingham, Chesterfield, and others. Once, when under examination before a committee of the house of commons, being jocularly asked for what purpose he supposed rivers to have been created, he is said to have replied: 'Undoubtedly to feed navigable canals.'

BRINE, n. *brīn* [AS. *bryne*, saltness: Dut. *brijn*, pickle: Icel. *brim*, the surge on the sea-shore]: water of the ocean; water mixed with a large quantity of salt (see SALT): V. to steep among salt and water. BRINING, imp. BRINED, pp. *brīnd*. BRINY, a. *brī'nī*, pertaining to the sea or to brine. BRINISH, a. *-nīsh*, salt. BRINISHNESS, n. BRINE-PUMP, a pump for changing the water in steam boilers, so as to prevent an excess of saturation of salt.

BRINE-SHRIMP (*Artemia salina*): a small crustacean, of the order *Branchiopoda* (q.v.), which, unlike the greater number of animals of that order, is an inhabitant not of



Brine Shrimp:

a, mature; *b*, young.

fresh but of salt water, and is indeed remarkable, because it is to be found in myriads swimming about in the brine of salt-pans previous to boiling, when, having been concentrated by exposure to sun and air for about a fortnight, it destroys the life of almost all other marine animals. The

BRING—BRINVILLIERS.

full-grown brine-shrimp is about half an inch long. The little animal is almost transparent and is extremely active and graceful in its movements. The workmen at salt-pans so confidently ascribe to it the rapid clearing of the brine in which it occurs, that when it does not appear in their *salterns*, they transport a few from other salterns. They multiply with extraordinary rapidity.

BRING, v. *bring* [AS. *bringan*; Dut. *brenge*, to bring; Sks. *bhri*, to bear]: to fetch; to bear; to convey; to produce; to cause to come. BRING'ING, imp. BROUGHT, pt. pp. *brought*. BRING'ER, n. one who. TO BRING BACK, to recall. TO BRING ABOUT, to effect or accomplish. TO BRING DOWN, to depress or humiliate. TO BRING FORTH, to give birth to; to produce, as fruit. TO BRING FORWARD, to produce to view. TO BRING OUT, to expose; to develop. TO BRING IN, to import; to introduce. TO BRING ON, to cause to begin; to produce. TO BRING UNDER, to reduce to subjection; to subdue. TO BRING UP, to nurse; to educate; to cause to come up. TO BRING TO, to check or arrest the progress of a ship while sailing. TO BRING TO LIGHT, to make clear; to discover. TO BRING TO MIND, to recall to memory. TO BRING OFF, to clear; to procure to be acquitted. TO BRING OVER, to convert; to draw to a new party. TO BRING TO PASS, to effect.—SYN. of 'bring': to carry; fetch; bear; convey; transport.

BRINJAREE DOG, *brin'ja-rē*: rough-haired or long-haired variety of greyhound (q.v.), used in the Deccan, and said to be the best of the hunting-dogs of India. It is said to be superior in size and strength to the Persian greyhound, but not to be equal to the British greyhound in swiftness. It is generally of a yellowish or tan color.

BRINK, n. *brīngk* [Dan. and Sw. *brink*, declivity: Icel. *brīngr*, a grassy slope, hillock: W. *bryn*, a hill]: the edge or margin of a steep place.

BRINVILLIERS, *brāng-ve-yā'*, MARIE MARGUERITE, Marquise DE, notorious as a poisoner in the time of Louis XIV.: daughter of Dreux d'Aubray, Lieutenant of Paris; received a careful education; and in 1651, while still young, was married to the Marquis de Brinvilliers. This nobleman seems to have been a gay and careless spendthrift, who allowed his wife to do as she pleased. He even introduced to her a young officer named Jean Baptiste de Gaudin, Seigneur de St. Croix, who was exceedingly handsome, and who inspired her with a violent passion. Her easy husband, however, was wholly indifferent to his wife's conduct; but her father, who seems to have had a stricter sense of duty, caused St. Croix to be arrested and imprisoned in the Bastille. It was here the latter learned from an Italian the art of preparing poisons, and on his release he imparted his fatal knowledge to his mistress, who, during his imprisonment had affected the greatest piety, spending most of her time in visiting the hospitals and in attending the sick. The marchioness now resolved to destroy her father. St. Croix eagerly abetted her, in the hope of obtaining a portion of the paternal inheritance; but in order to test the efficacy of the poison, she tried its effects upon the invalids of the *Hôtel*

BRIOUDE—BRISBANE.

Dieu. Having satisfied herself, she commenced operations on her parent, kissing and poisoning him continually for eight months, until her diabolical patience was exhausted, and she was at last induced to administer a very violent dose. He died, and no one suspected the marchioness. With St. Croix's assistance, and that of a domestic servant, Jean Amelin, *alias* Chaussée, she next poisoned, with the same fearful indifference to crime, her two brothers and her sisters; her object being to find means of supporting her extravagant style of living with her paramour. Several times she attempted to poison the marquis, her husband; but he escaped, and, as was said, by means of antidotes given by St. Croix, who dreaded that he should be compelled to marry the widow. St. Croix died suddenly 1672—his glass mask having fallen off while he was engaged in preparing a poison—leaving documents inculcating the marchioness. She was also accused about the same time by her accomplice Chaussée, who, being arrested, confessed all, and was condemned to be broken alive. The marchioness escaped to England; afterward she went to Germany, and next to Liege, where she took refuge in a convent. From this, however, she was craftily decoyed by an officer of justice disguised as an abbé, and conveyed to Paris. Among her papers was found a general confession of her crimes, including the above-mentioned murders, and many others. One strange confession stated that, out of pity for a virtuous young lady who had been imprisoned in a convent, the marchioness had poisoned a whole family! It is a singular fact, that this infamous woman was a bigot in her religious tenets, and was quite exemplary in her attendance at church. At her trial in Paris, she at first denied all charges brought against her, and pretended that the 'general confession' had been written during the insanity caused by a fever; but after being put to the torture, she made a full confession, and was beheaded, 1676, July. Her career had excited such terror in France, that Louis XIV. instituted a distinct tribunal, the *Chambre Ardente* (q.v.), to investigate cases of poisoning by the 'succession powder' used by the marchioness.

BRIOUDE, *brē-ôd'*: town of France, in the n.w. of the dept. of Haute-Loire. The church of St. Julien was founded in the 9th c., on the site of a still more ancient edifice erected on the spot where the saint was martyred. Lafayette was born here. Pop. (1880) 4,815.

BRISBANE, *briz'bān*: cap. of Queensland, seaport, and chief seat of trade in the state: abt. 640 m. n. of Sydney; about 25 m. from the mouth of the B. river, which falls into Moreton Bay. North and South B. are connected by the Victoria iron bridge, 1,080 ft. in length. B. was settled as a penal station 1825, by Sir Thomas Makdougall Brisbane. It contains some fine buildings, among which are the Houses of Legislature, which cost £100,000; the post-office, telegraph office, the viceregal lodge, and the Queensland National Bank. There are upward of 30 churches, and three daily and four weekly newspapers are published. There are

BRISBANE—BRISK.

three parks and well laid out botanic gardens. Regular steam communication is kept up with the other Australian ports, and with London. The channel of the river has been deepened to admit of large vessels coming up to B. A spacious dry dock was opened at South B. 1881. B. is terminus of Southern & West. railway; transcontinental line from B. to the Gulf of Carpentaria has been surveyed. Pop. (1901) 119,428.

BRISBANE, General Sir THOMAS MACDOUGAL: 1773, July 23—1860, Jan. 27; b. at Brisbane, the family seat, near Largs, Ayrshire, Scot.: soldier and astronomer. At the age of 16 he entered the army; and with a company which he raised in Glasgow 1793, B. took part in all the engagements of the campaign in Flanders; and in the West Indies, to which he was sent 1796, he greatly distinguished himself under Sir Ralph Abercromby. He afterward served in the West Indies as col. of the 69th; and in 1812 obtained command of a brigade under the Duke of Wellington in Spain. For his conspicuous bravery at the battle of the Nive he received the thanks of parliament. When Napoleon abdicated, B. was sent in command of a brigade to N. America, from whence he was recalled 1815, but too late to admit of his being present at Waterloo. In 1821, B., on the recommendation of his friend the duke, was appointed gov. of New South Wales, a position he held for four years, introducing many wise reforms, especially in penal treatment. He secured at his own expense good breeds of horses for the colony; promoted the cultivation of the sugar-cane, vine, tobacco, and cotton; and left at the close of his administration—which was marked by perfect tolerance and protection of all classes of Christians—50,000 acres of cleared land where he had found only 25,000. But high as B. ranks as a soldier and administrator, as a man of science he holds a still higher place. While in Australia, he catalogued no less than 7,385 stars, for which great work—known as ‘the Brisbane Catalogue of Stars’—he received the Copley medal from the Royal Soc. On his return to Scotland, he had an astronomical observatory established at his residence at Makerstoun, and applied himself entirely to scientific pursuits. He entered warmly into the plans of the British Assoc. for ascertaining the laws of the earth’s magnetism, and in 1841 had a splendid magnetic observatory erected at Makerstoun, the observations made there filling three large volumes, published in the *Transactions of the Royal Society of Edinburgh*, of which he was president, having been elected on the death of Sir Walter Scott. He founded two gold medals for scientific merit—one in the award of the Royal Soc., the other in that of the Soc. of Arts.

BRISK, a. *brisk* [F. *brusque*, quick, rude—from It. *brusco*, eager; W. *brys*, haste; Gael. *briosg*, lively]: active; nimble; full of life and spirit; lively; sparkling. **BRISK’LY**, ad. *-lī*, in a brisk manner; vigorously. **BRISK’NESS**, n. the state of being brisk; liveliness. To **BRISK UP**, to enliven; to appear with life and spirit, as ‘to brisk one’s self up.’ **BRISK’ING UP**, imp. **BRISKED UP**, pp. *briskt.*—**SYN.** of ‘brisk’: alert-

active; nimble; quick; prompt; sprightly; lively; ague, gay; vivacious.

BRISKET, *n.* *briskēt* [OF. *brichet* and *brischet*, the breast of an animal: Icel. *brisk*; Sw. *brusk*, gristle: Gael. *brisk*, brittle; *briskeac*, cartilage]: that part of the breast of an animal that lies next the ribs.

BRISSOT, *bre-sō'*, JEAN PIERRE: 1754–1793, Oct. 30; b. Chartres, Fr.: one of the first movers in the French Revolution, and afterward numbered among its victims. He was educated for the bar, completed his studies at Paris, and went into the office of a procurator, but quickly turned to authorship. From his earliest years he had devoted himself with passionate eagerness to literary studies, especially history, economy, and politics, and, with other lingual accomplishments, acquired a thorough mastery of English. His first work, *Théorie des Lois Criminelles* (1780), gained the approbation of Voltaire and D'Alembert, and was followed by his *Bibliothèque des Lois Criminelles*, which established his reputation as a jurist. Having removed to London, he there started a learned journal, under the title *Lyceum*, for which, however, he found no adequate support. He therefore returned to Paris, and soon afterward was imprisoned in the Bastille, on a charge of having written against the queen a brochure, which, in fact, was penned by the Marquis de Pelleport. After four months in the Bastille, he was liberated through the intervention of Madame de Genlis and the Duke of Orleans. B. continued to write tracts on finance, etc., but his love of freedom and vehement hatred of despotism again involved him in danger, and, to escape from a *lettre-de-cachet*, he once more retired to England. He afterward visited N. America, as representative of the *Société des Amis des Noirs*. On his return to France, he zealously assisted in the outbreak of the Revolution, and was elected by the citizens of Paris their representative in the constituent assembly, where he had predominant influence over all the early movements of the Revolution. He also established a journal, called *Le Patriote Français*, which became the recognized organ of the earliest republicans; and, through his superior knowledge of politics and the usages of constitutional countries, he gathered round him the young men of talent and spirit who were opposed to the court-theory of absolute sovereignty. It thus happened that, without his being formally considered the head of a party, all the movements of the early revolutionists were profoundly influenced by him, and he incurred the bitter hatred of the court reactionists, who affixed the nickname of Brissotins to all the advocates of reform. Afterward, the Brissotins formed the Girondist party. In the Convention, B. was representative of the dept. of Eure-et-Loir. Here his moderation made him suspected as a friend of royalty, as he opposed the 'men of September' and the trial and condemnation of the king. When Louis XVI. heard his doom pronounced, he exclaimed: 'I believed that Brissot would have saved me!' But B. was weak enough to imagine that the best way to save the king would be to vote first for his

BRISTLE—BRISTOL.

death, and then appeal to the nation to spare his life. B. and his party, perhaps the purest in principle and the weakest in action, ultimately fell before the fierce accusations of the Mountain, or Jacobin party, which believed, or pretended to believe, that the virtuous B. had received money from the court to employ against the Revolution. With 20 other Girondists, B. suffered death under the guillotine.

BRISTLE, *n.* *brīs'sl* [AS. *bristl*, a bristle—from *byrst*, a bristle: Sw. *borst*; Icel. *burst*; Dut. *borstel*; Scot. *birse*, a thick elastic hair: Swiss, *borzen*, to stand out]: the stiff hair on the backs of swine, particularly wild boars; any stiff hair: V. to stand erect as bristles; to strut about with head erect in anger or defiance. BRISTLING, *imp.* *brīs'ling*: ADJ. showing like bristles. BRISTLED, *pp.* *brīs'sld*, rough and stiff like bristles. BRISTLY, *a.* *brīs'li*, thick set with bristles; rough.

BRIS'TLES: strong hairs growing on the back of the hog and wild-boar, extensively used in the manufacture of brushes, and also by shoemakers and saddlers. They form an article of export from Russia and Germany; also from France and Belgium, and in small quantities recently from China. Russian B. vary in value from \$30 to \$200 per cwt.; German, from \$30 to \$175. From France and Belgium, they vary in value from 50c. to \$1.12 per lb. The total value of these imports into Britain alone is between 2 and 3 million pounds sterling. The quality of B. depends on the length, stiffness, color, and straightness—white being the most valuable. The best B. are produced by pigs that inhabit cold countries. The Russian hog is a long, spare animal, and the thinner the hog, the longer and stiffer the bristles. When the Russian hog is sent to the south and fattened, the B. become soft, and of course depreciate in value. In the summer, the hogs are driven in herds through the forests, to feed on soft roots, etc., when they shed their B. by rubbing themselves against the trees. The B. are then collected, sewed up in horse or ox hides, and sent to fairs, whence they find their way, through agents, to all countries.

BRISTOL: town in Hartford co., Conn., 18 m. w.s.w. of Hartford by the New York and New England railroad. It is a considerable manufacturing centre, with several foundries, machine shops, stocking mills, etc., but its chief industry is the manufacture of clocks, which has been carried on in the town of B. since early in the century, the eight-day brass clock invented by the Ives Bros. having been first manufactured in B. 1832, at which time it was the most important clock manufacturing town in New England. B. supports one weekly newspaper. Pop. (1870) 3,788; (1880) 5,347; (1890) 7,382; (1900) 6,268.

BRISTOL: city in Bucks co., Penn.: on the Delaware river, 23 m. above Philadelphia, 10 m. s.w. of Trenton by the Penn. railroad, nearly opposite Burlington, N. J.; having almost hourly communication with Philadelphia by steamboats. It is pleasant and neatly built, and has a bank, three weekly papers, and a number of factories. It is also the terminus of the Delaware branch of the Penn. canal. One

BRISTOL.

of its attractions is a valuable mineral spring. Pop. (1870) 2,040; (1880) 5,273; (1890) 6,553 (1900) 7,104.

BRISTOL: town, port of entry, and cap. of B. co., R. I., 1 m. s.e. of Providence, 11 m. n. of Newport; on a peninsula which stretches out toward the south between Narragansett Bay on the w. and Mount Hope Bay on the e. The town is 5 m. long and 3 broad. Its principal feature is Mount Hope, a beautiful eminence rising 300 ft. above tide water and which gives a fine view from its summit, besides being historically interesting as the ancient residence of King Philip, killed here 1676. The inhabitants raise principally vegetables for the market. This pleasant town is a summer resort, and contains several churches, banks, and manufactories. It has good schools, and a weekly paper. The commerce, 1880, was 27 registered vessels, tonnage 1,803. During the Revolutionary war B. was bombarded by the British, and a large portion of it burned. Pop. (1870) 5,302; (1880) 6,028; (1890) 5,478; (1900) 6,901.

BRISTOL, *bris'tul*: important maritime city in the w. of England; long. $2^{\circ} 35' 28''$ w., lat. $51^{\circ} 27' 6''$ n.; upon the rivers Frome and Avon, and partly in the counties of Gloucester and Somerset, joined with the former for ecclesiastical and military purposes, but otherwise a city and county in itself. It is 108 m. from London by road. The ancient portion of B. consists almost entirely of shops, warehouses, offices, manufactories, and other commercial buildings. The streets are, with few exceptions, narrow and irregular; but great improvements have been effected in them recently at a cost of half a million sterling, and there are many handsome shops, and other buildings of superior character; among the latter, the banking-house of the West of England Company, the Assize Court and Guild Hall, Bank of England, General Hospital, Colston Hall, and Victoria Rooms. A great central terminus has been erected for the various railways. The most remarkable modern structure, however, is the suspension bridge over the Avon, at Clifton, which is 702 ft. in span, and 245 ft. above high-water. Among the ancient buildings are the church of St. Mary Redcliffe, the Cathedral, and Temple Church, remarkable for its leaning tower. Some remains are seen of the ancient castle and walls, traces of British encampments at Clifton and Leigh, and considerable Druidic vestiges at Stanton Drew. The modern portions of B., including Clifton, Cotham, Redland, etc., consist of handsome residences, in squares, terraces, crescents, and detached villas, and some creditable specimens of architecture in churches, chapels, assembly and club rooms. The floating harbor and quays extend more than a mile through the city, and are formed by embanking and locking the old courses of the rivers, which now flow through a new channel cut at a cost of about £600,000. The tonnage of vessels entering the port of B. in 1847 was returned as 546,753 tons. During the year 1894, the total tonnage entered and cleared at B., excluding the home trade, was 1,102,536 tons. The chief trade is with Canada and the United

BRISTOL.

States, West Indies and S. America, Portugal, the Mediterranean, Russia, Mauritius, Turkey, France, and w. coast of Africa. Principal exports are iron, tin-plate, copper and brass, coal, salt, and manufactured goods. Manufactures are chiefly cotton goods, glass, refined sugar, earthenware, lead, chemicals, leather, and floor-cloths. The ship-building yards have the reputation of turning out excellent sea-going vessels. The *Great Western*, the pioneer of steam-communication across the Atlantic, the *Great Britain*, and the ill-fated *Demerara*, were built here. The railways terminating in Bristol are—the Great Western from the e., the Midland from the n., with a branch to Bath; the Bristol and Exeter from the w., the North Somerset from the s.; the Great Western line communicating with s. Wales, and short branches to Avonmouth and Portishead. The municipal government of B. is vested in a mayor, 16 aldermen, and 48 town-councillors, a lord-lieut., and lord high steward. The benevolent institutions of B. are numerous and well supported. The most important are the Infirmary, the General Hospital, the Blind Asylum, Orphan Asylum, Asylum for Deaf Mutes, alms-houses, reformatories, etc., and the extraordinary Ashley Hill Asylum, for 2,050 orphans, built and maintained without any systematic provision for meeting expenses, except the unsolicited contributions that continuously flow in from all parts of the world year after year, in answer to prayer, as its founder, the Rev. George Müller, declares. Its admirable management and its great practical beneficence are undeniable. The public dinners of the Dolphin and Anchor societies are well known from the occasional political importance of speeches made at them; but they and the Grateful Society were instituted in memory of Colston, the merchant-prince, and they collect alms for lying-in women. Among charitable institutions must be reckoned the well-endowed Colston, City, and Red Maids schools, and other free schools. Other educational establishments are Clifton College and the grammar school, and many proprietary and private schools; there are also a medical school, fine arts academy, and trade school. University College has 12 professors and lecturers, and had in 1880 about 500 students, of whom nearly half were women. The Baptists have a theological college here.

The first records of the history of B. speak of it under the ancient British name of *Caer-oder*; it then became a stronghold of the Romans; on their departure, was again occupied by the Britons, until, 584, the Saxons drove them out, and giving it the name of *Brightstowe* or *Bricstowe*, made it a thriving place of trade—aboriginal slaves being a principal item in the commerce. It was sacked by the Danes. Henry III. gave it the rights of a corporate town; Edward III., those of a city and county in itself. In 1247, the parishes of *Redcliffe*, *Temple*, and *St. Thomas* were added to B. During the civil wars, it was alternately taken by royalists and parliamentarians, and by the latter, the castle and fortifications were razed. It afterward became the principal port for trade with the West Indies, and carried on a flourishing business in negro slaves. In 1793, the

BRISTOL BAY—BRITAIN.

'Bridge Riots' occurred. In 1804 the docks were begun, and in 1809 they were opened to shipping. In 1831, the 'Reform Bill Riots' resulted in the destruction of the bishop's palace, custom-house, excise-office, jail, toll-houses, a number of private residences, and several lives. The bill itself, by the addition of Clifton, etc., gave the city its present municipal boundaries. Among the names of note in the history of B. are those of the Fitzhardinge family; William of Worcester; Canynge, the great merchant and restorer of Redcliffe Church; Colston and Whitson, merchants and philanthropists; Sebastian Cabot, the navigator, the poets Southey and Chatterton; Lawrence and Bailly, artists; Sydney Smith, canon of Bristol Cathedral; Robert Hall, Coleridge, and Hannah More; the Misses Porter, and others. B. (since 1885) returns four members to the house of commons. Pop. (1901) 328,842.

BRISTOL BAY: arm of the Pacific Ocean in N. America, n. of the peninsula of Alaska. B. B. receives the waters of two considerable lakes, which, communicating with each other, offer an opening into the interior.

BRISTOL-BOARD, n. *brîs'tul-bôrd* [from the town of *Bristol*]: a kind of a fine pasteboard having a smooth surface. **BRISTOL-STONE**, n. a quartz-crystal of great purity. **BRISTOL BRICK**: same as Bath-brick (q.v.); formerly manufactured in Bristol, Eng.; now made in the United States.

BRISTOL CHANNEL: inlet of the Atlantic Ocean, in the s.w. of England, between s. Wales on the n., and Devon and Somerset shires on the s.: it may be regarded as an extension of the estuary of the river Severn. It is about 80 m. long and 5 to 48 m. broad, the greatest breadth being between St. Gowan's Head and Hartland Point, its most western and external points, this line passing through Lundy Isle. It is the largest inlet or estuary in Britain, having a very irregular coast-line of 220 m., and receiving a drainage of 11,000 sq. m. The chief rivers which flow into it are the Towy, Taff, Usk, Wye, Severn, Avon, Axe, Parrot, Taw, and Torridge. The tides in it rise to an extraordinary height—at Bristol, 35 ft.; at King's Road, 40; and at Chepstow, sometimes 70. The rapid flow of the tides meeting the currents of the rivers produces, in the narrow parts of channel, and in the mouths of one or two of the rivers which enter it, the phenomenon of the *bore*, the tide advancing like a wall of water sometimes 6 to 9 ft. high. The chief bays and harbors are, on the n., Caermarthen and Swansea bays, Cardiff Roads, the mouths of the Usk and Wye, and the Severn estuary; and on the s., Bideford or Barnstaple, Morte, Ilfracombe, Combe Martin, Minehead, Porlock, and Bridgewater.

BRISURE, n. *brîs-ôr'* [F., a fracture]: any part of a rampart or parapet which deviates from the general direction.

BRIT (*Clupea minima*): small species of herring, abundant near the New England coast. It serves as food for bluefish.

BRITAIN, GREAT: see GREAT BRITAIN.

BRITAIN, NEW: see NEW BRITAIN.

BRITANNIA.

BRITANNIA, *brĭ-tăn'nĭ-a* [perhaps from Celtic *brith* or *brît*, painted, the ancient Britons being in the habit of painting their bodies blue with woad]: ancient name of the island of Great Britain (see BRITANNICÆ INSULÆ). The Romans under Julius Cæsar (who wished to chastise the Britons for aiding the Veneti, a tribe in Gaul, against the Roman power) invaded Britain B.C. 55 and 54, but made no permanent conquest. Nearly a hundred years after, A.D. 43, the real conquest began under Claudius; and in spite of a desperate resistance by the native British princes, especially Caractacus and Queen Boadicea, the s. half of Britain was conquered, and made a Roman province. Agricola, sent by Nero, 78, consolidated these conquests, and extended the influence of Rome to the Firths of Forth and Clyde, between which, 84, he erected a chain of forts to repel the inroads of the northern Caledonians, in the line of the stone Wall of Antoninus, erected 140 by Lollius Urbicus. Agricola was the first Roman to send a fleet round the island, and the first Roman general to come in contact with the Caledonians, whom, under their leader Galgacus, he overthrew, in 84, at a hill called the Mons Grampius, the situation of which has not been satisfactorily determined. The Romans made many ineffectual attempts to subdue the Caledonian barbarians, and penetrated, for this purpose, through the n.e. of Scotland as far as the Moray Firth, as is still attested by the remains of Roman camps and stations along their line of march, and the relics of Roman art found in connection with them. Not only did the Caledonians on their own soil resist the Roman sway, but by constant inroads into the Roman territory s. of the Wall of Antoninus, they so harassed the Romans themselves, that the latter were forced to abandon their conquests for 80 m. s. of that wall, and to secure permanently their remaining conquests in s. Britain by a line of defensive works between the mouth of the Tyne and the Solway Firth. Here Agricola had raised a line of forts, and here in 120 Hadrian built a wall, which was repaired by Severus 210. After 210 the Romans did not attempt to regain their lost provinces. Subject to these incursions of the Caledonians, the opposition of the native British princes, and the invasion of tribes from the opposite shores of the continent, the Romans held sway in Britain till about 410, soon after which time the Saxons invaded s. Britain, and ultimately subdued it. Britain, s. of the Solway Firth and the mouth of the Tyne, in the reign of Claudius, formed one Roman province under a consular legatus and a procurator. Ptolemy mentions 17 native tribes as inhabiting this tract. Toward the close of the 4th c., Roman Britain constituted a diocese in the prefecture of Gaul, and was divided into five provinces, of which the boundaries, though uncertain, are supposed to have been as follows: B. Prima, England south of the Thames and the Bristol Channel; B. Secunda, Wales; Flavia Cæsariensis, the country between the Thames, Severn, Mersey, and Humber; Maxima Cæsariensis, the rest of England to the Scottish border; and Valentia—soon abandoned by the Romans—or Scotland s. of the Wall of An-

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toninus. The population of Roman Britain included Roman and Germanic elements, which had partially blended with the native Britons, who were of Celtic stock, with an earlier Euskarian or Basque admixture. The Romans governed Britain by a vicarius or vicegerent resident at Eboracum (York), under whom were consulars, presidents, and other subordinate officers. To insure the obedience of the natives, at least three Roman legions—composed chiefly of Gauls, Germans, Iberians, and a few pure Romans—were stationed in Britain; viz., at Eboracum, Deva (Chester), and Isca (Caerleon) in s. Wales. Under the Romans, many towns (coloniæ and municipia)—56 are enumerated by Ptolemy—arose in Britain, and diffused Roman law and civilization over the country. The towns of Eboracum (York) and Verulamium (near St. Albans) had the privileges of Roman citizenship. The Romans made many roads or streets (*strata*), of which there are still numerous remains, across the country, all centring in London. They also developed it into a grain growing country. Druidism was the religion of the Britons at their conquest by the Romans, but the latter introduced Christianity and Roman literature into the country. There are many remains extant of the presence of the Romans in Britain, such as camps, roads, ruins of houses, baths, flues, altars, mosaic pavements, painted walls, metallic implements and ornaments, weapons, tools, utensils, pottery, coins, sculptures, bronzes, inscriptions, etc. These remains show that the Romans wished to render their British conquests permanent, and that they had greatly improved the arts of the ancient Britons, as is evident on comparing the remains with the far ruder native antiquities of the British pre-Roman or pre-historic era, such as tumuli, barrows, earthworks, so-called Druidical monoliths and circles, cromlechs, cairns, pottery, weapons, tools, utensils, ornaments, etc. Many of the Roman remains in Britain show also that the Romans had introduced into the country the refinements and luxuries of Rome itself.



Under the term BRITANNIA, Great Britain has been personified in the fine arts as a female seated on a globe or on an insulated rock, and leaning with one arm on a shield, the other hand grasping a spear or a trident. The first example of this personification is on a Roman coin of Antoninus Pius (died 161). The figure reappears first on the copper coinage of England in the reign of Charles II.

BRITANNIA METAL—TUBULAR BRIDGE.

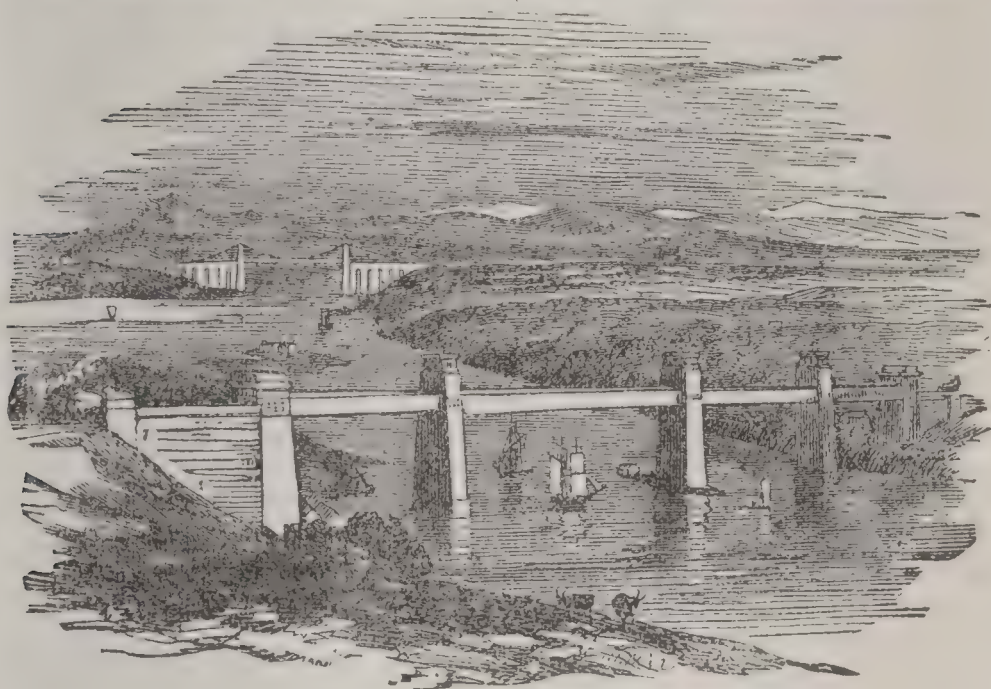
1665); the celebrated beauty, Miss Stewart, afterward Duchess of Richmond, is said to have served as model to the engraver, Philip Roetier. The Britannia that appears on the reverse of British copper coins since 1825 was the design of Mr. W. Wyon. See Scarth's *Roman Britain* (1883).

BRITANNIA METAL: an alloy largely used for the cheaper kinds of tea and coffee pots, tea-spoons, etc. The proportions of the metals used in its manufacture are various, but the average composition in 100 parts is: tin, $85\frac{1}{2}$; antimony, $10\frac{1}{2}$; zinc, 3; and copper, 1. B. M. is harder than pewter (q.v.), hence vessels or spoons made of it are not so liable to lose their shape, or to be indented with a slight blow. A variety of B. M., called *Queen's Metal*, is extensively used for similar purposes, and it ranks intermediate in hardness between pewter and ordinary B. M. Queen's Metal is composed of—tin, 9; antimony, 1; bismuth, 1; and lead, 1. The present composition of Britannia metal at Birmingham is usually 90 tin + 8 antimony + 2 copper, without any zinc or bismuth; though some manufacturers deviate a little from this formula, by adding one or both of the metals last named. The manufacture was begun at Sheffield by Hancock and Jessop, 1770; it reached Birmingham toward the close of the century, and made gradual progress. At first, the articles were made by stamping with dies, and soldering up into form; this slow operation rendered the articles expensive. Afterward, the curious process of *metal-spinning* was introduced; and this, with the subsidiary operation of swaging, rendered a great reduction in price possible. In the spinning process, a thin sheet or piece of Britannia metal is placed upon a wooden model shaped like the article to be made; the model is made to rotate in a lathe; and burnishers and other tools are employed to press the yielding metal into all the curvatures of the model. Ductility is an essential quality to the attainment of this end with the metal; how complete it is, may be seen in such articles as Britannia metal teapots and dish-covers, the principal forms of which are given not by hammering, stamping, or casting, but by spinning. Besides spinning and swaging, the processes include stamping, soldering, casting, and polishing. When electro-plating was introduced, an increased use of Britannia metal arose, as it is a good ground or basis for the deposited silver. Britannia metal spoons and ladles, made by casting, stamping, and burnishing, have been nearly driven out of the market by German silver; but the former metal is more largely used than ever for hot-water jugs, soup tureens, gravy-dishes, vegetable and side dishes, dram bottles, drinking-cups, sandwich cases, wine-coolers, toilet soap-boxes, liquor-frames, cruets, waiters, trays, etc.; and as a basis for electro-plate. Birmingham is the chief seat of the manufacture.

BRITANNIA TUBULAR BRIDGE: railway bridge over the Menai Strait, remarkable alike for its gigantic dimensions, and as being the first construction of the kind ever undertaken. To facilitate communication with Ireland

BRITANNIA TUBULAR BRIDGE.

via Holyhead, the directors of the Chester and Holyhead railway in 1845 sought the aid of Robert Stephenson, the great engineer, to bridge the strait with a structure for the safe passage of heavily laden trains without in any way interfering with the navigation of the channel. About a mile above the suspension-bridge, and nearer Carnarvon, a rock in the middle of the strait rose ten ft. above the water at low tide; and on this site, provided by nature, it was resolved to erect the bridge in the form of a rectangular tube, composed of wrought-iron plates riveted together in a manner to combine the greatest strength with the greatest lightness. See **STRENGTH OF MATERIALS** and **TUBULAR BRIDGES**. In the spring of 1846, the undertaking was commenced;



Britannia Tubular Bridge.

by 1849, June 22, the Britannia Tower on the rock in the centre of the strait was completed (height, 191 ft. 6 in. above highwater mark). Other two towers, some 18 ft. lower, were erected on each side of the Britannia Tower; thus dividing the space into four spans, of which the two centre ones are 460 ft. each, the other two comparatively narrow. The short tubes between the abutments and the shore towers were constructed, by means of strong scaffolding and stages, in the places they were to occupy when finished; the long central tubes were built at the water-edge, whence they were floated on pontoons to the base of the towers, which had grooves or recesses made to receive them, and then elevated gradually (supports being built under their ends as they ascended) by powerful hydraulic presses to the requisite height, 102 ft. above high-water mark. 1849, Oct. 13, the first long tube, 472 ft. in length (12 ft. being allowed for the rest at both ends), and about 1,800 tons in weight, was safely fixed at its proper height above the sea. The other centre tube was raised by December; and 1850, Mar. 5, a train swept through, and the bridge was open for traffic. In Aug. the parallel line of tubes was completed, and

BRITANNIC—BRITISH AMERICA.

the up and down trains could now pass over the Menai with as little delay and danger as over any other part of the line. The total length of the bridge is 1,841 ft., of the tubes, 1,513 ft. The extreme height of the tube at the Britannia Tower is 30 ft., diminishing to 22 ft. 9 inches at the abutments, 'the difference being made to give a true parabolic curve to the top while the bottom is straight.' Inside, the width is 13 ft. 8 inches throughout, and the height 26 ft. at the middle, and 18 ft. 9 inches at the ends. To provide for the expansion and contraction of the metal, the bed-plates in the shore towers and in the abutments, on which the tubes rest, are made to move freely on cast-iron rollers and balls. This precaution, for securing free movement to the tubes, was not unnecessary, as it has been found that between the expansion of summer and contraction of winter there is a difference of fully 12 inches. The total weight of iron used was nearly 12,000 tons, of which the tubes contain 9,360 tons of malleable iron, 1,015 tons of cast-iron, and 175 of permanent railway. In their fabrication 186,000 different pieces of iron, fastened together by more than 2,000,000 rivets, were used; and in the towers, abutments, etc., there are 1,492,151 cubic ft. of masonry. The total cost was about £602,000. The whole structure was completed in less than five years. See TUBULAR BRIDGE.

BRITANNIC, a. *brī-tăn'nik* [L. *Britannia*, Britain]: pertaining to Great Britain; British. BRITAN'NIA-METAL, n. a metallic alloy of block-tin, antimony, zinc, and copper. BRITISH, a. n. *brī'tish* [AS. *Brittisc*]: pertaining to Britain, or its people. BRITISH-GUM, a substance of a brownish color, very soluble in cold water, formed by heating dry starch to a temperature of about 600° F. BRIT'ON, n. -*ōn*, a native of Britain: see BRITANNIA.

BRITANNICÆ INSULÆ, *brī-tan'nī-sē ĭn'só-lē*: in ancient classic writers previous to Cæsar, a term designating the British Isles, including Albion (England and Scotland), and Hibernia or Ierne (Ireland), with the smaller isles around them. Aristotle, in the beginning of B.C. 3d c., knew only of Albion and Ierne. Cæsar, about B.C. 54, was the first to apply the name Britannia to Albion. Ptolemy, 2d c. after Christ, is the first to apply Little Britain to Ierne or Ireland, and Great Britain to Albion or England and Scotland. Herodotus, B.C. 5th c., is the first writer to mention Britain with any sort of definiteness; previous Greek writers speak of Britain only in connection with the Phœnician tin trade carried on with the Cassiterides or Tin Isles (the Scilly Isles and Cornwall), which they often confound with the Azores. The Phœnician trade with the British Isles began about B.C. 1000, the Phœnicians giving the native Britons salt, skins, and bronze vessels in exchange for tin and lead. Ptolemy enumerates 52 different Celtic or Gaelic tribes as inhabiting Britain in his time. See CELTIC NATIONS.

BRITANNICUS, *brī-tăn'nī-kūs*: son of the Roman emperor Claudius: see NERO.

BRITISH AMERICA: see AMERICA, BRITISH.

BRITISH ARMY.

BRITISH ARMY: the military establishment of Great Britain. (For other European armies, see **ARMIES, MODERN.**)

Like the other armies of modern Europe, the British army originated in the feudal system (q.v.). When regal power, tempered by a parliament, superseded that system, the people, according to their rank in life, were expected to provide themselves with certain kinds of weapons and defensive armor. The justices of the peace were empowered to see to these military duties of the people. When the nation was either actually engaged in war, or apprehensive of invasion, the sovereign issued commissions to experienced officers, authorizing them to draw out and array the fittest men for service in each county, and to march them to the sea-coast, or to any part of the country known to be in most danger: see **ARRAYER**. It was in the time of Henry VIII. that lord-lieutenants and deputy-lieutenants of counties were first appointed as standing officers for assembling and mustering the military force. During the earlier years of the Tudors, contracts were made by the king with 'captains,' who undertook to provide, clothe, and feed so many fighting-men, for a given money allowance; but the power intrusted to the lord-lieutenants gradually changed this system, in relation at least to home-defense. In the reign of Charles I., the important question arose, whether the king of England did or did not possess the right to maintain a military force without the express consent of parliament; and this question was more bitterly discussed when the king billeted his soldiers on the people. After the troubles of the civil wars and the commonwealth, Charles II. found himself compelled to agree, on his restoration, to the abandonment of all the army except a kind of body-guard or household brigade of 5,000 men, sanctioned by the parliament. In the 13th year of his reign, he succeeded in obtaining a statute, declaratory that 'the sole and supreme power, government, command, and disposition of the militia, and of all forces by sea and land, and of all forts and places of strength, is the undoubted right of his majesty; and both or either of the houses of parliament cannot nor ought to pretend to the same.' Both Charles II. and James II. found, however, to their mortification, that this statute did not in effect give them so much real military command as they had wished and intended—because the commons, by holding the purse, virtually held the power.

It was in the time of William and Mary that the real basis for the modern B. A. was laid. The **DECLARATION OF RIGHTS** (q.v.) settled, in positive terms 'that the raising and keeping of a standing army in time of peace, without consent of parliament, is contrary to law.' The first **MUTINY ACT** (q.v.) was passed 1689, to last for six months only; but it has been annually renewed ever since, except in three particular years; and it constitutes the warrant on which the whole military system of England is exercised by the sovereign, the consent of parliament. Since then, with only three interruptions, the ministers of the crown have

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annually applied to parliament for permission to raise a military force, and for money to defray the expenses. The sovereign can make war, and can bestow military employments and honors; but the commons, as the representatives of the tax-paying nation, provide a check on the grasping by courtiers of military privileges. The law on army regulation was revised, and the B. A. made the subject of special legislation in the Army Discipline Bill 1879.

The great distinction between the B. A. and that of almost every other state in Europe, is that the service is *voluntary*. The subjects of the crown engage, by free choice, to serve in the army for a definite number of years. In the rare cases where forced service by bailot is obtained, it is in the militia, not the regular army: see MILITIA. The British soldier has much hard colonial life to bear, and many long voyages to make; he is, moreover, almost entirely shut out from the chance of being a commissioned officer. As a consequence, the ranks are filled mostly from the more necessitous classes of the community—by those who from want of steady habits, or of education, are the least fitted for industrious pursuits; whereas in France and many other foreign countries, the profession of arms is regarded as an honorable one, of which even the private soldier feels proud. De Fonblanque, comparing the peace establishments of the chief European armies 1857, found that of England to be the smallest in ratio to population, but the most costly in relation to its strength. The English ratio was 1 in 128; the French, 1 in 95; the Prussian, 1 in 80; the Russian, 1 in 72; the Austrian, 1 in 68. An English private soldier costs the country £52 per annum; French, £36; Prussian, £31; Austrian, £18, 10s.; Russian, £13, 5s. The English cost per man is still higher now than it was in 1857, on account of increased attention being paid to the well-being of the soldier.

The B. A., in all its completeness, is supposed to be commanded by the sovereign, assisted by the sec. of state for war in some matters, and by the officer commanding in chief in others. The component elements are the household troops; the infantry of the line; the cavalry of the line; the ordnance corps, comprising artillery and engineers; other bodies of native troops, maintained out of the revenues of India; the militia; the yeomanry cavalry; the reserve; the volunteer artillery and rifles; and sometimes during war, foreign legions. The 'peace establishment' of the B. A. varies according to the political aspect of affairs abroad, and to the strength of the economizing principle at home. In 1814, when England was engaged in tremendous contests abroad, the regular army reached 200,000 men, exclusive of fencibles, foreign legions, and militia. In the first few years after the termination of the great war against Napoleon, the reductions in the B. A. involved the compulsory retirement of no less than 10,000 military officers, who thereupon went on half-pay; these, by the filling of vacancies, transfers, and deaths, have nearly disappeared. The elasticity which permits the enlargement or contraction of the army arises from varying, not so much the number of

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regiments, as the number of battalions in a regiment, of companies in a battalion, or of men in a company. In a comparison of the strength of the regular army at various periods 1820-79, it appears that the actual number of regiments has varied but little. But of late the 110 line regiments have been reorganized as 71 (of linked battalions). For this and connected changes, see WAR SERVICES.

The strength of the B. A. declined 1815-35, and has increased since. The augmentation has been occasioned partly by wars in Asia and Africa, and partly by a sense of insecurity amid the vast armaments of the continent. In comparing the strength of the forces at different periods, much confusion is apt to arise from different modes of interpreting the words 'British army.' This designation may include the whole of the royal troops in India, whether supported out of imperial or Indian revenues; it may include the militia, the volunteers, the yeomanry cavalry, the foreign legions—or it may exclude any one or more of these. The 'British army,' and the 'military force of the British empire,' are treated often as convertible terms: to the production of much confusion where actual numbers are given.

The B. A., 1890, Jan. 1, comprised 137,600 officers and men, 13,242 non-combatants, 63,000 horses, 422 guns; field reserve, 69,800 officers and men, 338 guns; first reserve, 750,000 officers and men, 142,600 horses, 1,260 guns; colonial and Indian state troops, 224,000 officers and men, 182 guns; total officers and men, 1,181,400; horses, 205,600; guns, 2,202; in peace establishment, 46,214 inf., 34,112 cav., 36,200 artil., 22,000 engineers and train, with 63,000 horses and 422 guns. Including Canada and Australia, and excluding other colonies and India, Great Britain had a pop. capable of bearing arms of 11,000,000. The total cost of the B. A. for the financial year 1888-90 was \$86,-679,000, of which \$71,612,000 were paid to the effective services, and \$15,067,000 to the non-effective. The pay and allowances of officers and men in active service amounted to \$25,022,500, provisions, forage, fuel, etc., cost \$13,025,000, the manufacture and supply of warlike stores, \$9,040,000; medical establishments, \$1,497,500; militia pay and allowances, \$2,650,000; works, buildings, and fortifications, \$3,565,000; clothing establishments, services and supplies, \$4,228,000; milit. education, \$576,500; and divine service, chaplains, etc., \$286,000. The payments to non-effectives included rewards for distinguished services, \$78,500; half-pay, \$396,500; retired pay gratuities and payment allowed by army purchase commission, \$5,933,000; widows' pensions and compassionate allowances, \$648,500; pensions for wounds, \$64,500; hospital in-pensions, \$156,500; out-pensions, \$6,687,000; superannuation compensation and compassionate allowances, \$888,000; and retired allowances to adjutants, militia, yeomanry and vols., \$216,000. The distribution of the active force was about as follows: England and Wales, 70,613; Ireland, 26,854; Scotland, 3,912; Guernsey and Alderney, 825; Jersey, 843; Egypt, 3,389; colonies, 28,941; Bengal, 46,890; Bombay,

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12,11; Madras, 11,289; Burmah, 3,155. The nationalities of non-commissioned officers and men were: English, 150,048 (751 per 1,000); Irish, 30,302 (152 per 1,000); Scotch, 16,838 (84 per 1,000); born in India or colonies, 4,907 (12 per 1,000); foreigners, 136 (1 per 1,000). The terms of enlistment are, for long service, 12 years; for short service, 7; and reserve, 5. Men serving 21 years continuously are entitled to life pensions. Under the new mobilization regulations, two army corps will always be held in readiness for embarkation, should the dispatch of an expedition be rendered necessary. The regts. in the first army corps are maintained at an establishment of, cav., 625 of all ranks, and 380 troop horses; foot guards, 840 of all ranks; inf., 812 of all ranks. Their reserves are liable to be called out at any moment, and their militia battalions would be embodied on the dispatch of the line battalions from England. This corps is kept as much as possible consolidated and from detachment duty, to facilitate speedy embarkation. The second army corps is similarly told off, but the regts. forming it are given a longer time to concentrate, because of their being scattered at different stations. The royal body-guard comprises the honorable corps of gentlemen-at-arms—the personal guard of the sovereign on all state occasions—and the yeomen of the guard. The chief officer of each ranks as capt., must be a peer, and goes out of office with the govt.

BRITISH ASSOCIATION: association for bringing together men eminent in all the several departments of science, to assist the progress of discovery, and to extend over Great Britain the latest results of scientific research. A prevailing impression that England had fallen behind other countries, both as to the general estimation in which scientific men were held, and as to the prosecution of science itself, led to its formation. It was thought that an imposing union of men of science with the nobility, gentry, and clergy might tend to revive the philosophic spirit of the country. Such meetings in Germany probably suggested the idea of this institution. Many leading men took part in its formation, but the honor of being its founder must be ascribed to Sir David Brewster. By his exertions the first meeting of those favorable to the design was held at York 1831. The Abp. of York, the mayor and council of the city, entered warmly into the project. At this meeting the constitution of the society was determined, the several sections had their provinces assigned to them, and subjects were proposed on which reports were to be drawn up and read at the ensuing meeting, which was held at Oxford 1832, with the warm welcome of the university. The jubilee meeting was held at York 1882. An enumeration of the several sections of the society, each of which has its own committee and president, will show its range of topics: Section A., Mathematical and Physical Science; B., Chemistry; C., Geology; D., Zoology and Botany, including Physiology; E., Geography and Ethnology; F., Economic Science and Statistics; G., Mechanical Science.

BRITISH CENTRAL AFRICA.

At the close of each meeting, it is determined at what town in the United Kingdom the next shall be held, and a president of the whole Assoc. is appointed, who delivers an inaugural address. In 1884, the place of meeting was at Montreal, Canada. The subscriptions of a continually increasing membership have placed at its disposal a large fund, which is applied for apparatus or the labor of subordinates, in cases requiring long astronomical calculations, or meteorological observations.

Beside the immediate ends obtained by such an Assoc., its utility is evident from the intimate connection between the several branches of science, and the impossibility that any one mind can be conversant with them all. He who now hopes to make discoveries in science must limit himself to a few chosen studies; and yet such is the interlacing of all the several branches of inquiry, that he must often find it indispensable to know the last results of each. The botanist or the physiologist must consult the accomplished chemist; the chemist must call in the aid of those who have specifically studied the action of heat, light, and electricity; the geologist needs them all, and is in turn consulted by all. Thus, a certain brotherhood of science is formed, in which each has his specialty, and yet each leans upon his brother.

In ancient times it was otherwise. The facts on which a philosopher speculated were those which lay open to the eyes of all. Thales could see the rain fall and plants grow, and forthwith pronounce that the vital energy of all things was to be found in water; he could exercise his imagination in independence of the labor of all other men. The philosopher of modern times cannot move a step without a careful consideration of the theories of his predecessors and contemporaries; he has to take notice of the innumerable facts brought to light by various observers, aided by those artificial arrangements which convert observation into experiment.

BRITISH CENTRAL AFRICA PROTECTORATE,
THE: a portion of British Central Africa, lying around the shores of Lake Nyasa, and extending to the banks of the Zambesi. It includes all British Nyasaland, as well as the Shire Highlands, and the greater part of the basin of the river Shire. The expenses of administering the Protectorate are partly met out of revenue locally raised, and further by an annual grant from the Imperial Gov. The administration is in the hands of a commissioner, acting under Foreign Office. The port of Brit. Cent. Africa is Chinde, at mouth of Zambesi, where a small concession has been granted by Portuguese gov. Area of Protectorate is 38,000 sq. m. Principal occupation of European settlers is planting; thriving plantations of coffee, sugar, cinchona, and tobacco have been established. Chief towns, Blantyre (pop. 6,500); Zomba (headquarters of administration); Fort Johnson (principal port on Lake Nyasa and naval depot); Karonga (n. end of L. Nyasa), starting point for Tanganyika; and Kotakota (w. coast of L. Nyasa). Protectorate divided into 12 dist. Almost entire trade with Unit. King.

BRITISH COLUMBIA—BRITISH LION.

BRITISH COLUMBIA: see COLUMBIA, BRITISH.

BRITISH COMBO: territory in the British colony of Gambia, west Africa, near the town of Bathurst. It forms a portion of the peninsula between the sea and the mouth of the Gambia river.

BRITISH EAST AFRICA: an immense territory of East Africa, between German East Africa and the Italian protectorate of Somaliland; area, over 1,000,000 sq. m.; pop. estimated at between 2,000,000 and 3,000,000. The coast extends from Wanga, 4° 40' s. lat., to the mouth of the Juba river, 0° 15' s. lat. The territory contains the valley of the Upper Nile and the mountainous region of Equatorial Africa, in which are the high mountains of Kenia, Elgon, and Ruwenzori. Ivory, gum, India rubber, sesame seeds, cocoanuts, copra, coir, maize, rice, and hides are exported. The government is principally vested in the British East Africa Company, which was founded in 1888, with a royal charter, but in 1894, Uganda, n. of Victoria Nyanza, was made a separate British protectorate, and received a separate administration. Darpur and Kordofan are merely in the sphere of British influence, by agreement with Germany and Italy. The British East Africa Company is rapidly opening up the country, constructing roads and telegraphs, and taking steps to suppress slavery and the slave trade. The seat of administration is at Mom-basa. The coast is unhealthy for Europeans, but most of the interior plateaus are salubrious.

BRITISH EMPIRE: see GREAT BRITAIN and IRELAND.

BRITISH GUIANA: see GUIANA, BRITISH.

BRITISH GUM, or DEX'TRINE, or LEI'OCOME: substance used by calico-printers and others for the thickening of colors, instead of the much more expensive gum arabic. It is prepared from potato-starch (q.v.) or sago-starch by passing the grains through iron cylinders at a temperature about 500° F. It differs from starch in giving no blue color with tincture of iodine, and in being readily soluble in water, and thus yielding a thick liquid resembling in consistence mucilage (strong solution of ordinary gum). B. G. is the material produced, by baking, in the crusts of loaf-bread (q.v.), which gives them their agreeable taste.

BRITISH LION: national emblem of Great Britain.

BRITISH MUSEUM.

BRITISH MUSEUM: important national institution in London. It originated in a bequest of Sir Hans Sloane, who, during a long lifetime, gathered an extensive and, at the time, unequalled collection of objects of natural history and works of art, beside a considerable library of books and manuscripts. These, in terms of his will, were offered, 1753, to the government, on condition that £20,000 should be paid to his family, the first cost of the whole having amounted to more than £50,000. The offer was accepted; the necessary funds were raised by a lottery; and the collection, with the Harleian and Cottonian Libraries, were arranged in Montague House, purchased for £10,250. The institution, thenceforth called the **BRITISH MUSEUM**, was opened 1759. From time to time, purchases and donations succeeded each other rapidly. Montague House sufficed for these acquisitions, till the Egyptian antiquities arrived in 1801. The purchase of the Townley marbles, 1805, necessitated the erection of a gallery for their reception. This, however, did not meet the increasing demand for space. The old house was condemned, and plans were prepared by Sir R. Smirke for new buildings: but none were undertaken till 1823, when the eastern wing of the present building was erected for the reception of the library of George III., which had been presented to the museum by George IV. The subsequent progress of the works was very slow. The building was completed 1847. It is a hollow square, whose sides are opposite to the four points of the compass. Throughout the exterior of the building, the Grecian Ionic architecture is adopted. The principal front is toward the s., facing Great Russell street, and presents an imposing columnar façade, 370 ft. in length. The great entrance-portico, in the centre, is composed of a double range of columns, 8 in each range. The columns are 5 ft. in diameter at their base, and 45 ft. in height. The tympanum of the portico is ornamented with an allegorical sculpture by Westmacott, typical of the progress of civilization. On each side of the museum there is a semi-detached house, containing the residences of the chief officers of the establishment. These give an additional length of 200 ft., making the whole length of the structure 570 ft. The interior of the building is admirably adapted to the purposes for which it is devoted. Some of the galleries, from their size and dimensions, have a very imposing appearance, as the King's Library, the Bird Gallery, etc. The grand entrance hall is a noble and lofty apartment, in the massive Doric style: it contains a statue of Sir Joseph Banks by Chantrey, and an ideal representation of Shakespeare by Roubilliac.

Scarcely had Smirke's plans been carried out, when demands were made from several of the departments for more accommodation. Additions have accordingly been made, rooms having been provided for the print department, and several new galleries for recent acquisitions of antiquities; but the most important addition is the magnificent reading-room which has been erected in the internal quadrangle. In no department of the museum was additional accommodation more needed than in the library. The number of

readers had increased beyond the accommodation, and so limited was the space for books, that the estimates for purchases were restricted to half of the sum which the trustees considered desirable, for the sole reason that the library would be inadequate for the reception of extensive additions. After considerable delay, and the consideration and rejection of several plans, a plan suggested by Mr. Panizzi, keeper of the printed book department, was adopted, and the result is a building thoroughly adapted to its purposes. Parliament voted the first grant for it 1854. It was opened 1857. The total cost was about £150,000, which includes the fittings and furniture, and the necessary shelves for immediate use. The building was erected in the interior quadrangle, which it completely occupies, with the exception of an interval of about 28 ft. all round, necessary for lighting and ventilating the surrounding building. The reading-room is circular. It is constructed principally of iron, with brick arches between the main ribs. The dome is 106 ft. in height, and its diameter 140 ft., being second only to the Pantheon of Rome, and that but by two ft. The use of iron has economized the space to an extraordinary degree, for while the piers which support the Pantheon fill 7,477 ft., those on which the reading-room rests occupy only 200 ft. Equally remarkable has been the saving of space in the fitting up of the library. The shelves are formed of galvanized iron plates, edged with wainscot, and covered with leather, and are supported on malleable iron standards. In all the cases except against the external walls, the bookcases are double, a lattice of iron-work being fixed for the longitudinal separation of the books. Thus, throughout the whole interior of the new building, walls are dispensed with, the divisions being in all cases formed of the double ranges of books. The building contains three miles lineal of bookcases eight ft. high. Assuming them all to be spaced for the average octavo book size, the entire ranges form 25 m. of book-shelves, and would accommodate 1,000,000 such volumes. In addition to this, the dome-room, which is the reading-room, has accommodation for 60,000 volumes. This magnificent room contains ample and comfortable accommodation for 300 readers. Each person has a space of 4 ft. 3 inches long, screened from the opposite occupant by a longitudinal division, which is fitted with a hinged desk graduated on sloping racks, and a folding shelf for spare books. In a recess between the two are placed an inkstand and penholders, thus leaving the table unencumbered. By an ingenious contrivance, one part of the iron framework is made to distribute fresh air in the summer and heated air in the winter. The vitiated air is conveyed through apertures in the soffits of the window into one of two separate spherical and concentric chambers which extend over the whole surface of the roof, and escapes through outlets around the lantern. The other chamber, between the external covering of copper and the brick vaulting, has for its object the equalization of temperature, during extremes of heat and cold out of doors. Every modern improvement, in short, has been ap-

plied, when it could be serviceable for the comfort or convenience of the readers. Much praise is due to the architect and builder, but a larger share is owing to Mr. (afterward Sir A.) Panizzi, who not only supplied the original design, but daily, almost hourly, superintended the progress of the work, continually suggesting little improvements. It is lighted at night by electric light.

This building, while supplying the demands of the printed book department, did nothing for the other departments. Various schemes have been suggested; the best, perhaps in the end the cheapest, of securing the ground immediately around the museum, was given up, and the trustees resolved to erect a building, to be devoted entirely to natural history—the departments of botany, zoology, geology, and mineralogy—on the site occupied by the international exhibition of 1862. Parliament voted, in 1873, £80,000 for this purpose, and the new rooms began to be occupied 1881. The whole cost of the new museum very nearly reached the sum of £400,000. This elegant terracotta edifice, in the Cromwell road, near South Kensington Museum, was designed by Mr. Alfred Waterhouse.

Contents.—At first, the contents of the museum were arranged under three departments—printed books, manuscripts, and objects of natural history. Under the last head were included the antiquities, works of art, etc., comprised in the Sloane collection, their number being too scanty to entitle them to constitute a separate department. The progress of the museum has caused a more precise division of its contents. From time to time, the number of the departments has been increased, so that, instead of three, there are now twelve—viz. printed books, maps, manuscripts, prints and drawings, Oriental antiquities, Greek and Roman antiquities, coins and medals, and British and mediæval antiquities and ethnography, zoology, botany, geology, and mineralogy.

Printed Books.—This is the largest department. It occupies the whole of the ground-floor on the n. and e. sides, the new building erected in the quadrangle, and a considerable portion of the basement. The keeper of the department has the help of four assistant-keepers and about 50 assistants. There are in addition upward of 50 attendants.

The original bequest of Sir Hans Sloane consisted of 50,000 vols. When these were placed in Montague House, a small collection of 2,000 vols., bequeathed to the nation by Major Edwards 1738, was added. In 1757, George II. presented the library of printed books collected by the kings of England since Henry VII., which included the libraries of Cranmer and Casaubon. He also annexed the important privilege, which the royal library acquired in the reign of Queen Anne, of being supplied with a copy of every publication entered at Stationers' Hall. By this means, the library has been supplied with the current British literature without expense or trouble, and the trustees have been able to devote the funds of the museum to the purchase of the earlier literature of the country and foreign publications. Among subsequent additions to the library, are the volu-

minous collection of pamphlets, etc., relating to the civil wars of England 1640–60, presented by George III.; the musical libraries of Sir J. Hawkins and Dr. C. Burney; Garrick's collection of old English plays; Dr. Bentley's collection of the classics, annotated by his own hand; the law library of F. Hargrave; Sir J. Banks's valuable and extensive collection on natural history; and a large mass of tracts and pamphlets relating to the French Revolution, purchased from J. Wilson Croker, and of very great value. The most important addition was made 1823, when George IV. presented the splendid library that had been collected by his father during his long reign at an expense of little less than £200,000. This library, which, from the terms of the gift, cannot be mixed with the general collection, occupies a large and handsome hall, extending along the whole of the ground-floor of the e. side of the museum. It is undoubtedly the finest and most complete library ever formed by a single individual. 'It contains,' says Sir H. Ellis, 'selections of the rarest kind, more especially works of the first ages of printing: it is rich in the early editions of the classics; in books from the press of Caxton; in the history of the states of Europe, in the languages of the respective countries; in the transactions of academies; and in a grand geographical collection.' The magnificent library of the Right Honorable Thomas Grenville, in importance second only to the king's library, was bequeathed to the museum 1846. It consists of 20,240 vols., which cost upward of £54,000. In the same year was obtained also the extensive collection of Chinese works, 11,509 vols., which belonged to Robert Morrison, the missionary. By purchases, bequests, and donations, the library has become one of the first in the world, containing now over 1,300,000 printed vols. See LIBRARIES. But even this does not represent the immense collection of separate and distinct articles in tracts, pamphlets, and manuscripts. The British Museum Library is (with the exception, perhaps, of the National Library of Paris) the largest collection of printed literature in the world. Since the opening of the new reading-room, and the consequent acquisition of the book-accommodation, the want of which long hindered the proper increase of the library, the rate of increase has been enormous. During the year 1880, there were added 27,543 vols., including music and volumes of newspapers, of which 2,379 were presented, 15 361 purchased, 8,857 acquired by home copyright, and 941 by international copyright. The number of parts of volumes was 39,873. In addition, the library had accumulated numerous miscellaneous articles. The pieces of music added were 5,911 complete works. The total number of articles received during the year amounted to 76,774. About 2,000 sets of newspapers were added.

A catalogue of the printed books, in seven octavo vols., was published 1813–19. So great have been the additions to the collection since the publication of that catalogue, that the interleaved copy of it, in which the new entries were made, had expanded in 1846 into 82 folio vols. This is now superseded by one general MS. catalogue, in upward

of 2,000 folio vols. The plan of printing the title slips was adopted 1880; and a printed catalogue is in progress. There are separate catalogues of the Grenville library, in 6 vols.; of music, in 126 vols.; of newspapers, in 4 vols.; of the pamphlets in the King's library, in 9 vols.; and of the pamphlets published during the civil war and commonwealth, called the 'Thomason Collection,' in 12 vols., all folio. These various catalogues are placed in the central circular stands in the reading-room, for consultation by readers. Here also are copies of the catalogue of the books of reference, arranged around the wall of the room, to which the readers have free access without the intervention of an official. These reference-books, forming a library of 20,000 vols., have been carefully selected to represent all the different branches of knowledge. The facility of consultation has been increased by the employment of different colors in the binding, corresponding to the colors of a hand-catalogue scattered throughout the room. Thus theological works are bound in blue, historical in red, philosophical in green, and so on.

The right of access to the library is easily obtained. Any person desiring it, is 'to apply in writing, addressed "To the Principal Librarian of the British Museum," and not otherwise, specifying his description and place of abode, and accompanying his letter with a written recommendation, satisfactory to an officer of the museum.' Formerly, the right of admission was granted only for six months at a time, and had then to be renewed. Under the new regulations, the ticket, once granted, does not require renewal; it can of course be withdrawn, and is not granted to persons under 21 years of age. When the reader has become well known to the officials, he is not even asked to show his ticket.

Maps.--The maps, charts, plans, and topographical drawings were separated from the library, to form a distinct department, 1867. There are over 50,000 published and 20,000 manuscript maps in the museum. Many of the latter have thrown much light on the history of early geographical discovery.

Manuscripts.--The manuscripts are contained in several rooms in the s.e. angle of the building. The work of the department is carried on by a keeper, assistant-keeper, a keeper of oriental manuscripts, and nine assistants. The manuscripts are for the most part bound in volumes, and placed in cases around the rooms. The collection consists of: 1. The Sloanean manuscripts, relating chiefly to medical and natural history subjects. 2. The Cottonian manuscripts, rich in documents referring to the history of Britain, including two of the originals of *Magna Charta*, in registers of English monasteries, and in original letters of royal and illustrious personages. This collection contains the *Durham Book*--a copy of the Latin Gospels, with an interlineary Saxon gloss, finished in 720. 3. The Harleian manuscripts, a collection rich in illuminated MSS., in ancient, civil, and ecclesiastical records, in manuscripts of the classics, among which is one of the earliest known copies of the *Odyssey*,

and in early English poetry. 4. The manuscripts of the Ancient Royal library. These were collected by the kings, from Richard II. to George II.; many were obtained from the monasteries, on their destruction. Among the most valuable treasures here are the *Codex Alexandrinus*, a manuscript of the Bible, written in uncial Greek, before the close of the 5th c.; and the *Basilicon Doron* of James I., in his own handwriting. 5. The Lansdowne manuscripts. This collection comprises the Burghley and Caesar papers, the manuscripts of Bishop Kennett, and numerous valuable historical documents and state papers. 6. The Hargrave manuscripts, almost exclusively connected with law. 7. The Burney manuscripts, containing a large collection of the Greek and Latin classics. Among them is a copy of the *Iliad*, corresponding to that of the *Odyssey* in the Harleian collection. 8. The Howard-Arundel manuscripts, obtained from the Royal Soc.; singularly rich in materials for British history and language. 9. The oriental manuscripts, composed of several purchases and bequests; including the manuscripts acquired by Mr. Rich while consul at Bagdad, and comprising numerous Syriac, Arabic, Ethiopic, and other oriental codices: a large series of Ethiopic manuscripts was obtained at Magdala, on the occasion of the Abyssinian war. 10. Additional manuscripts; consisting of innumerable bequests, donations, and purchases, which since the establishment of the museum have been and are still being acquired. Among recent additions may be specified a charter of William the Conqueror; the original mortgage-deed of a house in Blackfriars, dated 1612, Mar. 11, signed by William Shakespeare; the holograph manuscript of Scott's *Kenilworth*, and of many of Burns's poems, including the *Cottar's Saturday Night*, and the songs published in Johnson's *Scots Musical Museum*; an extensive series of papal bulls; several *Books of Hours*, including the famous *Bedford Missal*; and a large collection of original letters and papers relating to the affairs of Scotland during the 16th and 17th c. Catalogues of the complete collections have at different times been published. The additions to the ever-increasing Oriental and Additional collections are at intervals published in supplements to each of the original catalogues. Copies of all these, with manuscript lists of the annual additions, are placed in the reading-room for consultation.

Supplementary catalogues were printed till 1853; since then the additions have been kept up in manuscript catalogues. A general class catalogue, embracing all the collections, has been commenced, and the printing of it has begun. The first part is a catalogue of ancient and illuminated manuscripts, illustrated with photographic *fac-similes*, of which several volumes are published.

The right of using the reading-room includes the privilege of consulting the manuscripts. During 1880, the number of deliveries of manuscripts to readers in the reading-room amounted to 29,239; beside, the number consulted in the rooms of the department was about 6,000. These numbers do not include the volumes exhibited to visitors on private days.

Prints and Drawings.—The collections of this department, managed by a keeper and two assistants, are in rooms in the n.w. angle of the building. They consist of prints and drawings bequeathed to the museum, 1799, by the Rev. C. M. Cracherode; of those bequeathed 1824 by Payne Knight; and of numerous smaller bequests and donations. No purchases were made for this department until about 1840, when a sum was first included in the estimates for this purpose. Since that time, the prints and drawings have been increasing at a rate equal to any of the other departments of the museum. The collection is arranged in *schools*. 1. The Italian school, containing original drawings by Leonardo da Vinci, Raphael, Correggio, Tintoretto, Paul Veronese, Michael Angelo, Guido Reni, Salvator Rosa, and others. 2. The German school, containing drawings by Albert Dürer, Hans Holbein, Dietrich, Hollar, and others; and engravings by Lucas Cranach, Martin Schon, Gauer, and others. 3. The Dutch school, containing several superb originals of Rubens, an extensive and nearly complete set of the works of Rembrandt, with many drawings by A. Cuyp, Teniers, Van Dyck, etc.; and engravings and etchings by Berghem, Lucas van Leyden, Rembrandt, Ostade, etc. 4. The French school, with drawings by Watteau, Claude Lorraine, etc., and etchings and engravings by Bourdon, Boisseaux, Le Prince, etc. 5. The Spanish school, represented by some drawings of Murillo, and others of less note. And, 6. The English school, containing drawings by R. Wilson, Wilkie, Stothard, Callcott, Gibson, etc.; a splendid collection of Hogarth's prints, and specimens of the works of Barlow, Gaywood, Raimbach, Finden, Worlidge, Geikie, etc.

This department contains also an extensive and very valuable collection of works in niello; a beautiful silver cup, designed and carved by Benvenuto Cellini, and a wonderful stone-carving in alto-rilievo by Albert Dürer, representing the birth of St. John.

Oriental Antiquities.—Within the last ten years the objects in the museum, included under the name antiquities, have been divided into four departments. The first of them includes the Egyptian and Assyrian antiquities. The Egyptian monuments date from a period as remote as 2,000 years before the Christian era, and come down to the Mohammedan invasion of Egypt, A.D. 640. The collection comprises chiefly the following: antiquities which fell into the hands of the British army at the capitulation of Alexandria, presented by George III.; presents from General Vyse, the Duke of Northumberland, the Marquis of Northampton, Sir Gardner Wilkinson, and others; and acquisitions from the Earl of Belmore, Mr. Salt, and M. Anastasie. The sculptures are formed of granite and basalt; they represent human and allegorical figures, sometimes colossal. There are several beautifully sculptured sarcophagi. Most of the monuments are inscribed with hieroglyphics (q.v.). The key to this dead and forgotten language was furnished by the celebrated Rosetta stone (q.v.), in the centre of the gallery. The smaller Egyptian remains are exhibited in a gallery on the up

per floor; they consist of objects relating to religion, as representations of divinities and sacred animals, in wood, metal, stone, and porcelain; of objects relating to civil and domestic life, as dress, personal ornaments, household furniture, artistic and writing implements, armor and weapons of war, etc.; and of objects relating to death and burial, as mummies and coffins, with the scarabæi, amulets, and other ornaments found with them. A collection of papyri is exhibited on the n.w. staircase, containing extracts from the ritual of the dead.

The Assyrian antiquities are in a suite of rooms recently erected on the outside of the Egyptian gallery, and in a spacious room on the basement. The collection consists of sculptures excavated at Nimrud, Khorsabad, and Koyunjik by Layard 1847-50, and more recently by Rassam and Loftus, under the direction of Sir H. C. Rawlinson. The Nimrud sculptures are the oldest, belonging to a period B.C. 930-747. Those obtained from Khorsabad seem to have been executed under a monarch who reigned about B.C. 747-721, while those from Koyunjik belong to the time of Sardanapalus, apparently B.C. 721 and 625. The monuments consist chiefly of slabs of gypsum, alabaster, and limestone sculptured in low relief, the subjects being the exploits of the king whose palace walls they ornamented. Many of the sculptures are covered with cuneiform (q.v.) writing, which, by the labors of Rawlinson, Hincks, and Smith, has been deciphered, giving a history of this remarkable people, and corroborating the narrative in the Scriptures whenever they refer to the same event. See ASSYRIA. Beside the series of sculptures, the Assyrian collection includes a variety of smaller but highly curious and instructive objects, discovered at Nimrud and Koyunjik.

Greek and Roman Antiquities.—This collection occupies four apartments, parallel to the Egyptian gallery. The Lycian gallery contains a series of architectural and sculptural remains from ancient cities in Lycia, obtained by Sir C. Fellows 1842-46. In the next gallery are the remains of the famous mausoleum (q.v.) at Halicarnassus, erected in honor of Mausolus by his widow Artemisia. These remains were discovered by C. T. Newton 1857-59. In the same room are some remains of the Temple of Athene Polias at Prienæ, including the stone on which its dedication by Alexander the Great is inscribed. The Elgin gallery contains the sculptures from Athens and Attica, the greater portion of which were obtained by the Earl of Elgin, and purchased from him by parliament in 1816 for £35,000. The most important series in the gallery is the decorations of the Parthenon (q.v.), which, notwithstanding their dilapidated condition, form the most valuable monument of Greek art which has descended to modern times. The gallery contains also sculptures and casts from the temple of Wingless Victory, the temple of Theseus, and the Erechtheum, at Athens. In an extension recently made to this gallery, are a colossal lion from Cnidus, and a drum of a sculptured column, and other remains, from the temple of Diana at Ephesus. The Hellenic gallery contains a number of an-

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tiquities brought from Greece and its colonies at different times. The most important are 23 slabs of a frieze sculptured in mezzo-rilievo, which, from the locality where they were found, are called the 'Phigalian Marbles.'

The gallery on the s. side of the building is occupied with the Roman and Græco-Roman sculptures. The bulk of the collection was formed by Charles Townley, and purchased 1805 for £20,000. Additions have been made by the bequest of the collection of R. P. Knight 1824, and by various purchases and donations. The collection contains an interesting series of Roman portrait sculptures, and a very extensive mythological series, among which are some of universal fame—the Venus, Clytie, the Discobolus, and many others. A room on the basement is appropriated to mosaics and miscellaneous monuments, such as representations of animals, architectural and decorative fragments, and sacred and domestic implements. A fine collection from s. Italy, exhibiting specimens of the arts of the Etruscans, Greeks, and Romans, was bequeathed to the museum by Sir William Temple 1856.

The collections of smaller remains are in a suite of rooms on the upper floor. They consist of—1. An extensive series of vases, commonly, though not correctly known as Etruscan, formed from the collections of Sir W. Hamilton and Mr. Burgon, from purchases at the sales of the Prince of Canino, M. Durand, and others; and from excavations in Sicily, Rhodes, and on the sites of Greek colonies in Cyrene and elsewhere. 2. A miscellaneous collection of terra-cottas, mural paintings, and other objects. 3. Bronzes of Greek, Etruscan, and Roman workmanship, consisting of sculptures, and various domestic and other articles, as candelabra, lamps, vases, horse-trappings, armor, etc. 4. The collection of engraved gems and gold ornaments now, since the addition of the Blacas and Castellani collections, perhaps the richest in the world.

Coins and Medals.—The very large collection of these objects is arranged in chronological order under five great divisions, viz.: Greek, Roman, Mediæval and Modern, English, and Oriental. The department is under the care of a keeper, assistant-keeper, and four assistants.

British and Mediæval Antiquities and Ethnography.—The British collection is arranged in chronological order. The oldest series contains the antiquities of the stone and bronze periods, consisting of celts, daggers, swords, shields, and early pottery. The British-Roman antiquities comprise specimens of earthenware, lamps, and miscellaneous articles. A small collection of sepulchral urns, weapons, and personal ornaments represents the Anglo-Saxon period. The antiquities found in London, and belonging to C. Roach Smith, were some years ago transferred to this collection. The ethnographical collection contains antiquities as well as objects of modern use. In 1855 the extensive collections of antiquities and ethnography, belonging to Henry Christy, became the property of the museum, having been bequeathed by their proprietor. Felix Slade bequeathed his valuable collection of glass to the museum, and it is

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arranged so as to show the history of glass in all its branches.

Natural History Museum at South Kensington.—In 1856 the trustees united the natural history departments under Professor Owen, who was then appointed superintendent of natural history. In the spring of 1881 the new building erected at South Kensington, for the reception of the zoological, mineralogical, geological, and botanical departments, was opened to the public. The following departments, therefore, though nominally belonging to the B. M., now form the Natural History Museum at Cromwell road, South Kensington.

[*Zoological Department.*—To give an idea of the contents of this and the other natural history departments, would be to write an epitome of the various sciences they illustrate. This department contains a collection of animals arranged in systematic order in the galleries, comprising stuffed mammals, birds, reptiles, and fishes, and the hard portions of radiate, molluscan, and articulate animals. A room is assigned specially to the fauna of Britain. In rooms on the ground and basement floors are the collections of insects, of osteology, and of specimens preserved in spirits. An idea of the extent of the collection may be formed from the fact, that 142 separate publications, illustrative of the contents of the department, in the shape of catalogues, lists, etc., have been issued under the superintendence of the indefatigable past and present keepers. During 1880, there were added to this collection 24,283 specimens of animals, of which 4,718 were vertebrata, 4,206 mollusca and radiate, and 15,359 annulosa. In 1873, the unique and extensive collection of birds formed in the Eastern archipelago by Wallace, was acquired by purchase.

Botanical Department.—The herbarium of Sir H. Sloane, the nucleus of this collection, consisted of about 8,000 species, bound in 262 vols. In 1820, the magnificent herbarium of Sir Joseph Banks was bequeathed to the museum, and under the superintendence of the late Robert Brown, was transferred to two rooms prepared for it in the s.e. angle of the building. The collection has since been rapidly increasing: during 1880, about 9,000 species of plants were added; and in 1873, the late William Wilson's herbarium of British and foreign mosses was acquired by purchase. The collection contains an extraordinary number of typical specimens—the identical plants from which the original descriptions were taken by Linnæus, Aublet, Jacquin, Brown, Bentham, Bennett, and others. The exhibition rooms contain a series of specimens illustrating the most striking characteristics of the great divisions of the vegetable kingdom, arranged in order; and a series of fossil plants, the value of which is increased by the transparent sections showing their structure, placed beside them.

Geological Department.—This collection occupies the wall-cases of the principal gallery on the n. side of the museum. It contains an extensive series of fossil remains of plants and animals from the various fossiliferous strata; it is rich especially in fossils of the secondary formations. Among

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its more valuable contents may be mentioned the collections of Dr. Mantell, the tertiary fossils collected by Dr. Falconer in India, and the remarkable fossil birds from New Zealand.

Mineralogical Department.—The minerals are contained in the table-cases in the geological gallery. They are arranged according to a chemical classification. Many valuable and unique specimens are in the collection, which is rapidly increasing. In 1880, the number of specimens added was 324.]

The expenses of the museum are paid by grants of public money. According to the estimates, £136,432 were required in 1881–82.

Admission to the museum was at first by printed tickets, which were delivered by the porter to persons making a written application. There could be no more than 45 visitors, at the utmost, per day, under the regulations then in force. Now, all who present themselves are freely admitted; and every week-day the museum is visited by large numbers: as many as 43,000 holiday-folk have passed through the building in one day.

BRITISH NAVY.

BRITISH NAVY: governmental marine force of Great Britain. For the other chief navies of Europe, and for the U. S. Navy, see NAVIES, MODERN: UNITED STATES NAVY.

While the Romans occupied Britain, they were compelled to maintain a fleet of war-vessels on the coasts, to protect it from the ravages of the Saxons, who were the pirates and buccaneers of those times. When the Romans had departed, and the Saxons became dominant, the coasts were infested by another naval power—the Scandinavian Vikings. It was Alfred the Great who first established what may be called a navy in this island, consisting of efficient vessels, well manned, for protection, and not aggression. Ethelred made the building of a ship a condition for holding a certain acreage of land. William the Conqueror strengthened the navy by the institution of the CINQUE PORTS (q.v.). During the first three centuries after the conquest, we read of British fleets of 240, 400, and even 730 sail—a proof that the vessels must have been very small even if there were no exaggeration of numbers. Until 1485, the fleets were collected just as wanted; but in this year, Henry VII. conceived the idea of a *permanent* navy, to be ready at all times. He built the largest ship of the age, the *Great Harry*. Henry VIII. pursued the course established by his father, and still further strengthened the navy by instituting the admiralty, the navy office, the Trinity house, and the dockyards at Woolwich, Portsmouth, and Deptford. The *Henri Grace de Dieu*, the largest ship built by him, was of 1,000 tons burden; but most of the vessels were high, unwieldy, and narrow, with the guns nearly down to the water's edge. The ships of the navy presented an aggregate tonnage of 12,000 tons at the period of Henry's death. Elizabeth made a large increase in the navy; but they were not all royal ships which were sent to struggle against the Spanish armada. James I. made many improvements in ship-building, by encouraging a distinguished naval architect, Phineas Pett. Charles I., who built the *Sovereign of the Seas*, of 100 guns, was the first to group the royal ships into rates and classes. Cromwell brought up the navy to the strength of 154 sail, including a large number of two-deckers. Charles II. allowed it to fall into decay for a time; but his brother, the Duke of York, who afterward became James II., not only restored it, but brought it to a higher state of efficiency and strength than ever. When William of Orange became king of England, he found a navy carrying 7,000 guns and 42,000 seamen; he built many additional ships, some with as many as 80 guns, and established Plymouth dockyard. Queen Anne succeeded to the possession of a fine navy; which at her death had increased to 198 ships, mounting 10,600 guns, with a tonnage of 157,000 tons. George I. attended to the navy chiefly in repairing the ships after a period of war, and in supplying a new armament. George II. added to the number of ships, established a naval academy, and increased the renown of the B. N. during the Spanish war.

and eventful reign of George III. was especially distinguished by the achievements of the navy. When

BRITISH NAVY.

he came to the crown in 1760, he found himself in possession of 127 ships of above 50 guns, and 198 of 50 guns and under, manned by 70,000 seamen. These numbers, by building and by capture, were increased to 174 and 203 respectively, by the end of the American war. Throughout the European struggle, 1793-1815, the B. N. exhibited a spectacle, for vastness and achievements, never before equalled in any country. In the first nine years of this period, 1793-1802, England lost by war 5 ships of the line and 46 smaller vessels; but she captured from the French, Dutch, Spaniards, and Danes, in various battles, 74 ships of the line and 519 smaller vessels; or rather, four-fifths of this number were captured, and one-fifth destroyed. Beside these, more than 800 privateers were taken and destroyed by the English. Of the total number of captures, 144 ships of war were at once converted into British ships, and added to our navy. When war recommenced in 1803, England had 189 ships of the line, and 781 smaller ships of war; during the next seven years, the seamen varied from 100,000 to 120,000, and in 1810 the number was raised to 140,000. At all times, many of the ships of the royal navy are unemployed or out of commission; but it frequently happened during that great war that England had 450 liners, frigates, and sloops, beside smaller armed vessels, employed simultaneously. The conquered vessels added to the navy 1803-15 were upward of 100.

After the termination of the great European struggle, a large number of ships of war were put 'in ordinary,' or out of commission, and their officers placed on half-pay. In 1820, the vessels in commission, in ordinary, and building, comprised 127 ships of the line, 311 frigates and sloops, and 27 smaller vessels; but in this total of 465, there were only 113 in commission. In the 19 years that followed, almost wholly years of peace, the total number of ships of the line, frigates, and sloops, decreased; the gun-brigs, schooners, and cutters increased in number; while the first germs of a new element, a *steam navy*, made their appearance.

The year 1839 must be viewed as a turning-point in the history of the British navy. Twenty-four years of peace had thrown the memory of warlike achievements into the background; and the house of commons had insisted on the lessening of those estimates which provide for armies and navies. It was now found, however, that both Russia and France had accumulated formidable navies. From that year to the present, the B. N., in common with the navies of other powers, has been undergoing a series of 'reconstructions.' First, ships of larger size, and carrying heavier guns, were built. These ships, of immense power in the days of wooden broadsides, are now useless for war. The next stage, from about 1853-59, was the conversion of the force from a sailing to a steam navy. This became the era of great steam frigates of about 5,000 tons, and of heavy armaments in a few great guns, of which the *Mersey*, 36 guns, may be taken as a leading specimen. With the introduction of rifled guns, of force hitherto undreamed of, came the necessity for armor-plated sides. The fighting part of

BRITTANY—BRITTON.

the navy (i. e., the line of battle) changed once more after 1860 to low-sided vessels, clad in thousands of tons of iron plates. The *Warrior* was the first ship so built in England, and she was followed by a whole squadron similarly protected. Guns, however, went on increasing in offensive power; and whereas 5-inch plates were at first thought sufficient, now, 10-inch, 12-inch, 14-inch, and even 22-inch plates are necessary to exclude shot. Such a vast weight of armor all over a ship would sink any vessel of moderate dimensions. The principle of turret-ships is therefore becoming predominant, in which the greater part of the vessel, clad in comparatively light armor, is under water, or only just visible above the surface. The earliest formidable turret-ship was the ill-fated *Captain*, which, in 1870, capsized in the Bay of Biscay, and entombed 600 brave seamen, with the inventor, Captain Coles. Ships of analogous construction, with lower free-board, have been since built; and now the *Inflexible*, of 11,165 tons, carries 4 guns of 81 tons.

Of the B. N., 1895, Nov., there were 300 ships in commission. These were subdivided as follows: 48 armored ships, 196 unarmored ships, 7 training ships and brigs, 2 miscellaneous, 16 coast-guard tenders, 13 flag, receiving, steam, reserve, and store ships, and 18 training and drill ships. In addition there were on the ways or out of commission 186 vessels, making a total of 486 vessels, maintained at an expenditure of £14,302,000; men 93,750. A growing sentiment among English naval authorities was noted in favor of a return to lighter guns and an increase in the thickness of armor.

For various details about ships, seamen, etc., see the proper titles: see also TURRET-SHIP: ARMOR-PLATES: WAR-SERVICES.

BRITTANY: see BRETAGNE.

BRITTLE, a. *brīt'tl* [AS. *brytan*; Icel. *briota*; Dan. *bryde*, to break: Gael. *briste*, broken]: easily broken; not tough. BRIT'TLENESS, n. *-nēs*, the quality of being easily broken into fragments; want of tenacity. BRITTLE-WORTS, a genus of fresh-water plants, called *Chăra*, ord. *Charăcĕæ*, some of which are rendered brittle by having their stems incrustated with carbonate of lime. BRITTLE-STARS, star-fishes, marine creatures with five rays or arms very fragile; the *Ophiuroidea*.

BRIT'TON, JOHN: topographical and antiquarian writer; b. 1771, July 7, at Kingston-St.-Michael, near Chippenham. Wiltshire, Eng.; son of a farmer and village shopkeeper. Losing his parents in early years, he received but a scanty education. Some short notices which he contributed to the *Sporting Magazine* brought him into acquaintance with its publisher, Wheble, who employed him to compile the *Beauties of Wiltshire*, which he did in conjunction with a young literary friend, E. W. Brayley. They also prepared the *Beauties of Bedfordshire* in the same manner. B. after-

BRITZSKA—BRIZURE.

ward issued a more elaborate work, *Architectural Antiquities of England*. One of the most important of his subsequent publications was *The Cathedral Antiquities of England*, 14 vols., fol. and 4to, 1814–35, with upward of 300 highly finished plates. Altogether, his illustrated works of architectural and topographical description and antiquities number 87, beside others of a similar kind which he edited.

BRITZSKA, n. *brīts'kǎ* [Russ. *britshka*]: a long open carriage that can be closed at pleasure.

BRIVE, *bre-vā'*: town of France, dept. of Corrèze, pleasantly situated in the midst of vineyards, and shut in by a fine circular avenue of elms; about 15 m. s.w. of Tulle. It has manufactures of woolen, cotton-yarn, etc. Pop. 12,000.

BRISTHAM, *brīks'am*: market-town and seaport of Devonshire, Eng., beautifully situated on the s. side of Tor Bay, 5 m. s. from Torquay, 22 m. s. from Exeter. The town occupies the sides of two hills, and is divided into two parts, Upper and Lower B., the former consisting chiefly of a long straggling street. Some more recently erected parts of the town are well built, and contain good houses, but the older parts are mean. The prosperity of B. depends chiefly on its fisheries, it being the head-quarters of the great Devonshire fishery of Torbay, in which many vessels are employed, mostly trawlers, of which there are about 200. These are decked sloops of 40 to 50 tons burden, managed usually by three men and a boy. Great quantities of fresh fish are sent to London, Bath, and Bristol. Considerable quantities of iron ore are raised in the neighborhood and shipped here. B. has also a number of vessels in the coasting and foreign trade, the foreign trade chiefly with the Mediterranean. The admiralty have an establishment here for watering the navy. Near B. is a station of the South Devon branch of the Great Western railway. It was at B. that the Prince of Orange, afterward William III., landed, 1688, Nov. 4. Pop. of parish (1881) 7,033; (1891) 6,224.

BRIZA: see QUAKING GRASS.

BRIZE, n. *brēz*: same as BREEZE, the insect.

BRIZURE, *briz'ūr*, or BRIZÉ, or BRISÉ: *bre-sā'*: terms in heraldry to indicate that a charge is bruised or broken. See ROMPU

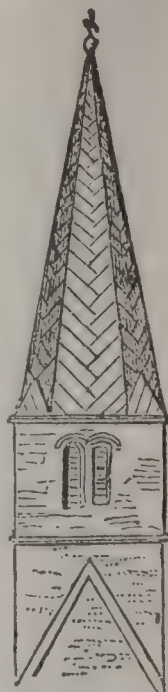
BROACH.

BROACH, n. *brōch* [F. *broche*, a spit—from mid. L. *brocæ*, a sharp stake, a needle: compare W. *procio*, to thrust; Gael. *brog*, to goad]: a sharp-pointed stake; a peg or pin; a spit; a spire which rises directly from a tower without a parapet; common in England and in parts of Scotland, also in the United States; sometimes spelled *broche*: V. to pierce as with a spit; to tap, as a cask, in order to draw off the liquor; to let out; to utter; to make public. **BROACH'ING**, imp. **BROACHED**, pp. *brōcht*. **BROACH'ER**, n, a spit; one who opens or utters. **TO BROACH TO**, among *seamen*, to incline a vessel suddenly to windward so as to expose it to the danger of oversetting. **TO BROACH A SUBJECT**, to open it up for consideration; to give publicity to it.

BROACH: town in India: see **BAROACH**.


BROAD, a. *brawd* [AS. *brād*: Goth. *braids*: Icel. *breidr*: Ger. *breit*]: wide; not narrow; extensive; open; coarse; not delicate; in *OE.*, bold. **BROAD'LY**, ad. *-li*. **BREADTH**, n. *brēdth*.

BROAD'NESS, n. the quality of being broad; extent from side to side; coarseness in speech. **BROAD'CAST**, a. thrown from the hand upon the earth as in sowing; not planted in rows; a method usually deemed inferior to sowing by the drill: Ad. by scattering or throwing as from the hand. **BROAD-ARROW** [see **ARROW**]: the mark placed on government stores, etc. **BROAD-AX**, an ax with a broad edge. **BROAD-BRIM**, a hat with a broad brim; by metonymy, a Quaker, from the broad-brimmed hats worn by them. **BROADCLOTH**, fine woolen cloth, double the usual width (see **WOOLEN** and **WORSTED MANUFACTURES**). **BROAD-LEAF**, a tree, *Terminalia latifolia*, a native of Jamaica. The wood is used for staves, scantlings, and shingles. It is sometimes mistaken for the almond-tree, from the similarity of its fruit. **BROAD-SEAL**, the great seal of England. **BROAD GAUGE**, in *railways*, the width of 6 or 7 ft. between the rails, as distinguished from the narrow gauge of 4 ft. 8½ in. **BROADSHEET**, a large printed loose sheet containing songs, narratives of current events, and the like, *formerly* sold by itinerant dealers; *now*, often applied to newspapers. **BROADSIDE**, the side of a ship above the water-line; in a war-ship, all the guns on one side discharged at once. **BROADSWORD**, a sword with a broad blade; the claymore of the Highlanders (see **CLAYMORE**). **BROAD-WISE**, in the direction of the breadth. **BROADEN**, v. *brawd'n*, to make or grow broad. **BROADENING**, imp. *brawd'n'ing*. **BROADENED**, pp. *brawd'ēnd*. **BROAD AS LONG**, the same measure in length as in breadth; much the same; equal; making no difference. **TO TAKE ON THE BROADSIDE**, to attack boldly and unceremoniously. **BROAD CHURCH**, a party in the Church of England avowedly holding a position between high and low church parties, professing moderate and liberal views, and a wide charity and toleration; many distinguished men are of this division,



BROAD ARROW—BROAD TOP MOUNTAIN.

such as Canon Kingsley, Dean Stanley, F. W. Maurice, Archdeacon Farrar. The term stands not for any recognized organization, but for a drift of thought.—**SYN.** of 'broad:' large; thick; ample; wide; extensive; comprehensive; vast; vulgar; coarse; obscene.

 **BROAD ARROW:** a British government mark, stamped, cut, or otherwise fixed on all solid materials used on ships or dock-yards, and on government stores generally, to prevent misappropriation. The origin of the mark is obscure. Previous to 1698, the naval authorities prosecuted a dealer in marine-stores, for having in his possession certain stores bearing the B. A. of his majesty. The defendant allowed the evidence against him to go on, and when asked what he had to say, replied, that it was *very curious* that the king and he, as a dealer, should both have the same private mark on their property! The receiver of stolen goods was acquitted, and this led to the passing of the act (1698), which enacts that persons in possession of naval stores, or goods of any kind marked with the B. A., or other marks therein mentioned, and usually employed in marking naval stores for the navy, shall forfeit all such goods and £200, and also pay costs. The mark is for iron, wood, etc., what the color-thread is for sailcloth and ropes, which enables the government to identify the smallest piece of such articles.

BROAD-BILL: see **SHOVELLER**.

BROAD-BOTTOM ADMINISTRATION: name derivatively applied to the ministry formed by Henry Pelham 1744, because it professed to include all parties of weight and influence in the state in a grand coalition, and comprised no less than nine dukes. Thus for a time the whig party was reunited, and even tory support secured. The ministry was dissolved 1754, by the death of Pelham, though several of its original members had seceded long before.

BROAD RIVER: rising in the Blue Ridge in Rutherford co., N. C., and flowing almost directly s. to Columbia, S. C., where it joins the Saluda, thence flowing s.e. into the Congaree, which empties into the Santee. The country around B. R. is exceedingly fertile.

BROADSIDE: simultaneous discharge of all the guns on one side of a ship of war. The fighting power of a ship used to be estimated by the weight of all the shot and shell that could be fired off at once from one side or half of the ship. Thus, the broadside of the old-fashioned *Duke of Wellington*, 131-gun war-steamer, amounted to 2,400 lbs. With iron-clad turret-ships the term is inapplicable.

BROAD/STAIRS: quiet watering place in Kent, 2 m. e.n.e. of Ramsgate. The church dates from the 12th c. Near B. is a noble orphanage.

BROAD TOP MOUNTAIN: in the n.e. of Bedford co., and the s. of Huntingdon co., Penn.; about 2,500 ft. above the level of the sea. Here are extensive beds of bituminous coal, for the transportation of which a railroad has been opened from the mountain to Huntingdon.

BROADUS.

BROADUS, JOHN ALBERT, D.D., LL.D.: Baptist minister: 1827, Jan. 24—1895, Mar. 16; b. in Culpepper co., Va. He was of Welsh extraction, the name being originally spelled Brodhurst, and was the son of a leading Virginia politician. He graduated at the Univ. of Virginia, 1850, with the degree A.M., and the following year was appointed asst. prof. of Latin and Greek in that university. This position he held for two years, during which time he was also pastor of the Bapt. church at Charlottesville, Va. He was chaplain of the univ. 1855-6, and then resumed his pastorate at Charlottesville. In 1859, he joined with the Rev. James P. Boyce in organizing the Southern Bapt. theol. seminary at Greenville, S. C., which opened with four professors and 26 students. The instructors were Drs. James P. Boyce, Basil Manly, William Williamson, and Dr. B., who filled the chair of homiletics and New Testament interpretation. During the civil war, he served as missionary chaplain in the confederate army of Gen. Lee. In 1863, he was made corresponding sec. of the Southern Bapt. S.-S. board. In 1865, the Southern Bapt. theol. seminary reopened with seven students. From Greenville the seminary was removed to Louisville, Ky., whither Dr. B. removed his residence 1877. In 1889, after the death of Dr. Boyce, he was elected to the presidency of the seminary. Among his numerous published writings are: *The Preparation and Delivery of Sermons* (used as a text-book in the majority of theol. seminaries of all denominations in America and Europe); *Memoir of James P. Boyce, D.D., LL.D.*; *Commentary on the Gospel according to Matthew*; and *Jesus of Nazareth*. He wrote extensively also for periodicals, and published a number of tracts. As a teacher and lecturer he was singularly successful; as a preacher he was as easily understood by children as by adults, and ranked among the ablest preachers of his generation.

BRODDINGNAGGIAN—BROCCOLI.

BRODDINGNAGGIAN, *brōb-dīng-năg'gĭ-an*, or **BRōB-DINGNAGIAN**, a. *brōb-dīng-nă'-jĭ-an*: gigantic in person, like an inhabitant of *Broddingnag* in *Gulliver's Travels*: N. a gigantic person or thing.

BROCA, *bro-kă'*, **PAUL**: 1824–80, July 9; b. in the Gironde, Fr.: eminent modern anthropologist. He studied medicine and became prof. of pathology at Paris, and famous as a surgeon. He was founder and sec. of the Anthropological Soc. of Paris, founder and prof. of the Anthropological Institute or School, and founder and editor of the *Anthropological Review*. He wrote several monographs, as on strangulation and hernia, on aneurisms, on anæsthesia, on abscesses, on hybrids, and on various anthropological subjects. He was leader of the evolutionist school in France. In the last years of his life, he was made a life member of the senate.

BROCADE, n. *brō-kād'* [Sp. *brocado*; It. *broccato*, a sort of cloth wrought with gold or silver: F. *brocher*, to stitch or embroider; *brochart*, brocade]: silken fabric woven with variegated gold and silver threads, and raised flowers, the figures being formed by the threads of the warp or weft being raised by the heddles, or, more generally, by the Jacquard-loom, in such order as to produce the pattern required. The word has much the same application to silk textures that damask has to linen textures or to worsted textures for upholstery uses (see **WEAVING: JACQUARD-LOOM**); any sort of stuff or cloth which has raised flowers or other work embroidered on its surface. **BROCA'DED**, a. woven with figures, etc.

BROCAGE, n. *brō'kāj*, OE. for **BROKERAGE**: the transactions of a broker; the gains obtained from such; the hire or gain obtained from mean and base transactions. Brocage bonds to procure marriage, promising a reward for influence to be used, are void by law in some countries.

BROCARD, n. *brōk'ărd* [after *Brocard* or *Burchard*, Bishop of Worms, who compiled books of 'sentences']: an elementary principle or maxim; a proverbial rule in law, ethics, or metaphysics.

BROCATELLO, n. *brōk'ă-tĕl'lo* [It. *brocatello*: Sp. *brocatel*, marble]: a species of brecciated marble, the component fragments of which are of various colors; a coarse-figured fabric.

BROCCOLI, n. *brōk'kō-lĭ* [It. *broccoli*, sprouts or tops growing from cabbages—from *brocco*, a sprout: F. *brocoli*]: one of the many varieties which cultivation has produced of the *Brassica oleracea*, the common kale or cabbage; ord. *Cruciferae*. The food portion is the fleshy edible head formed from the condensed young inflorescence. B. is said to have been originally brought to Italy from Cyprus about the middle of the 16th c. It differs little from cauliflower (q.v.), having colored instead of white heads, and a deeper tinge of color in the leaves, being also more hardy, which gives it its chief importance, as it can be obtained at seasons when there is no cauliflower in the open garden. It is perhaps

BROCHÉ—BROCKEN.

inferior to cauliflower in delicacy of flavor. There are many subvarieties, the number of which is continually increasing; and some of these are preferred for early spring sowing, with a view to an autumn crop; others for later sowing, with a view to a crop in the following spring. The subvarieties differ in size, in their more cut or entire leaves, in the greater or less degree of color—generally purple—with which the leaves are tinged, in the more or less compact form of the whole plant, in the more or less green, yellow, or purple color of the head, etc. Some of the kinds of B. preferred for late sowing and spring use are known by the general name of Cape B., the first of them being said—but on doubtful authority—to have been introduced into Britain from the Cape of Good Hope. The mode of cultivation of B. resembles that of cauliflower, except as to the times of sowing and transplanting, and that it is generally sown in the open ground, and not in a hotbed. A similar richness of soil is required. Various modes of protection in winter are adopted. In mild winters, protection is scarcely or not at all needed, but precautions are generally employed against severe weather. It is found very advantageous to plant in trenches of 6 inches deep, and to earth up the plants, as they are thus not only in some measure preserved from frosts, but also from the winds of winter, which are apt to shake and loosen plants, so as to cause their destruction. It is a common practice to take up some of the most advanced plants in the beginning of winter, and to lay them in a sloping position with their heads toward the north. The heads may thus be procured, but they are not in general large.

BROCHÉ, n. *brō-shā'* [F.]: a figured or embossed cloth fabric.

BROCHS, also called *Duns*, *Borgs*, and *Pictish Towers*: see **MOUSA**.

BROCHURE, n. *brō-shōr'* [F. *brochure*—from *brocher*, to stitch]: a pamphlet; a small book of only a few leaves: see **PAMPHLET**.

BROCK, n. *brök* [AS. and Gael. *broc*, a badger—from Gael. *breac*, spotted, freckled]: a badger—so named from its white-streaked face. **BROCKET**, n. *brök'ët*, in *Scot.*, variegated; spotted; striped; white-faced.

BROCK, Sir ISAAC: English general, killed in the battle of Queenston, Can., 1812, Oct. 11, shortly after capturing Gen. Hull (who was suspected of treason) and his forces. B.'s monument, crowning the heights above Queenston, is 185 ft. high, surmounted by a dome of 9 ft., reached by a spiral flight of 250 steps inside. The remains of Brock, and his aide-de-camp MacDonnell, who fell with him, lie in stone sarcophagi beneath, having been removed thither from Fort George. This is the second monument erected on the spot, the first having been destroyed 1840.

BROCKEN, *brök'ën* (*Mons Bructerus*, *Melibocus* of the ancient Romans): popularly known as the *Blocksberg*, the highest summit of the Harz Mountains. It is in the province

BROCKET—BROCKHAUS.

of Saxony, about 20 m. w.s.w. of Halberstadt, and is 3,740 ft. above the sea. The mountain is very frequently veiled in mist and cloud-strata, and is celebrated for the phenomenon known as the *Brockengespenst* ('Spectre of the Brocken'), which is merely the magnified shadow of men, houses, or other objects thrown upon the misty eastern horizon by the light of sunset. (See Milner's *Gallery of Nature*; Leibrock, *Der Brocken*, 1864.) In clear weather, a fine view is obtained from the summit.

BROCKET, n. *brök'ët* [F. *brocart*—from *broche*, a sharp snag]: a two-year-old red-deer, having a single sharp snag to his antler.

BROCKHAUS, *brök haws*, **FRIEDRICH ARNOLD**: 1772, May 4—1823, Aug. 20; b. Dortmund, Ger.: founder of the well-known firm of Brockhaus in Leipsic, publisher of the *Conversations-Lexicon*. A business venture in Holland 1802-10 did not prosper; he returned to Germany, and commenced business in Altenburg 1811. Before this, however (in 1808), B. had purchased the copyright of the *Conversations-Lexicon*, which had been commenced in 1796, and he completed the first edition, with the addition of two supplementary vols., 1809-10. In 1812, a second improved edition of the work was begun under the supervision of B. as editor. The peace of 1815 enabled B. to pursue prosperously his career. In 1817, his business had so increased, that he left Altenburg for Leipsic, where, in the following year, he began book-printing in addition to book-publishing. In the course of a few years, the *Lexicon* passed through six editions; it has now arrived at the thirteenth edition. Through all the enterprises of B. as a publisher, devotion to liberty and general enlightenment may be traced. B. was not only an able and assiduous man of business, but distinguished for literary culture, knowledge of the world, and numerous social accomplishments.

The business was afterward carried on by **HEINRICH BROCKHAUS**, 1804-74, second son of Friedrich Arnold B., and is now managed by Heinrich's sons, Rudolf and Edward. Among the numerous publications issued by the house, are the later editions of the *Conversations-Lexicon*, with an *Atlas*; the *Universal Encyclopædia*, by Ersch and Gruber; and the German *Penny Magazine*, founded 1833.

BROCKHAUS, **HERMANN**: 1806, Jan. 28—1877; b. Amsterdam; third son of Friedrich Arnold B.: studied at Leipsic, Göttingen, and Bonn, and lived successively in Copenhagen, Paris, London, and Oxford. From 1848 till his death, he held at Leipsic the chair of ordinary prof. of the Sanskrit language and literature. Among his works on Oriental literature are, the *First Five Books of the Large Collection of Fables, Kathâ Sarit Sâgara, in Sanskrit and German* (1839); an edition of the drama *Prabodha Candrodaya*, by Krishna Misra, with Hindu scholia (1845); Nachschebi's Persian version of the *Seven Wise Masters* (1845); and (1854) the Persian text of the *Songs of Hafiz*. After 1856, he was editor of the *Universal Encyclopædia*.

BROCKPORT—BRODIE.

B.'s method of printing Sanskrit in Roman types is now generally adopted in Germany.

BROCKPORT: post village, Monroe co., N. Y., on the Erie canal, 18 m. w. of Rochester, 59 m. e. of Niagara Falls by the N. Y. Central and Hudson River railroad. It is noted for its manufacture of pumps, reapers, and mowers, flour, lumber, etc. It contains 7 or 8 churches, a state normal school, 2 banks, and 2 weekly papers. Pop. (1870) 2,817; (1880) 4,628; (1890) 3,742; (1900) 3,398.

BROCKTON: a city (1881) in Plymouth co., Mass., 20 m. s. of Boston by the Old Colony railroad. It was formerly called North Bridgewater, and was the first of the three Bridgewaters that have sprung from the old Bridgewater township. It has become the largest, most enterprising and wealthy city in the co. Its manufacturing interests are important, the making of boots and shoes being the chief industry, besides that of furniture, carriages, etc. Pop. (1900) 40,063.

BROCKVILLE, *brō'kīl*: town of Upper Canada, or Ontario, taking its name from General Brock, a British commander, in the war of 1812 with the United States, killed in the battle which his army won on Queenston Heights, between the town and falls of Niagara. It stands on the left bank of the St. Lawrence proper, about 40 m. below Kingston, and about 160 above Montreal. Originally, its communications downward were interrupted by powerful and rugged rapids, now either avoided by canals or overcome by steam. B. is a thriving place. Pop. (1901) 8,940.

BRODEKIN, n. *brōd'kīn* [F. *brodequin*]: a buskin or half boot.

BRODHEAD, JOHN ROMEYN, LL.D.: 1814, Jan. 2—1873, May 6; b. Philadelphia. He graduated from Rutgers College 1831, and after studying law in the office of Hugh Maxwell was admitted to the bar 1835. He practiced in New York two years, when he retired to Saugerties, N. Y., and engaged in literary pursuits. In 1839 he was attached to the U. S. legation at the Hague, and two years later was commissioned by Gov. Seward to investigate the originals of the New York colonial records and land grants. He accordingly spent three years studying the archives of Holland, England, and France, from which he obtained many valuable documents regarding the early history of the state, translated and edited by E. B. O'Callaghan, and published in 11 quarto vols. by an act of the N. Y. legislature. In 1846 B. was appointed sec. of legation in England, Mr. Bancroft being minister. Returning to America 1849, he was appointed naval officer of the port of New York during Pierce's administration. He wrote *History of the State of New York*, 2 vols. (1853-71). He also delivered numerous addresses before literary and learned societies, afterward published. He died in New York.

BRODIE, *brō'dī*, SIR BENJAMIN COLLINS, D.C.L., Bart.: surgeon: 1783-1862; third son of the Rev. Peter Bellinger B., rector of Winterslow, Wiltshire, Eng. He

BRODY—BROGLIE.

studied under Sir Everard Home at St. George's Hospital, to which he was, 1808, elected asst.-surgeon, and afterward surgeon. He had previously lectured both on anatomy and on surgery. In 1810, he was elected a fellow of the Royal Soc., and in 1811 received their Copley medal for his physiological papers contributed to the *Philosophical Transactions*. In 1834 he was created a baronet, and he held the appointment of serjeant-surgeon to Queen Victoria, as well as that of first surgeon in ordinary to the Prince Consort. He was pres. of the Royal Soc., a corresponding member of the Institute of France, and a foreign member of other learned societies and academies in Europe and America: author of *Lectures on Local Nervous Affections* (1837, 8vo); *Hunterian Oration*, 1837; *Lectures Illustrative of Subjects in Pathology and Surgery* (1840, 8vo); *Introductory Discourse on the Duties and Conduct of Medical Students* (1843, 8vo); *Psychological Inquiries as to Mental Faculties* (3d ed., 1856); an edition of his works with *Autobiography* appeared 1865. He also contributed to several scientific journals.

His son, Sir B. C. BRODIE, F.R.S., was, 1855, elected Aldrichian prof. of chemistry at Oxford, a chair suppressed 1866: died 1880, Nov. 24.

BRODY, *brō'dī*: town of Galicia, Austria, on a swampy plain, surrounded by forests, about 58 m. e.n.e. of Lemberg. B., which was made a free commercial town 1779, has large trade in the agricultural produce of the country with Russia, Poland, and Turkey. Chief manufactures are leather and linen; jewelry, manufactured goods, and colonial produce are imported by way of Odessa. The trade is almost entirely in the hands of Jews, who are so numerous, that B. has been called 'The German Jerusalem.' Pop. (1880) 20,071; (1890) 17,534.

BROG, n. *brōg*: a pointed steel instrument used by joiners to make holes in wood for nails; a brad-awl: V. to pierce; to stab; to prod.

BROGAN, n. *brō'gān*, or BROGUE, or BROG, n. *brōg* [Gael. *brog*, a shoe; *brogan*, a little shoe—from *brogh*, strong, sturdy, rough]: a coarse, light, low-heeled kind of shoe, formerly in use among the aboriginal Irish and the Scottish Highlanders (see SHOES: SHOE-TRADE); a heavy shoe having the sole studded with nails, especially of half-dressed leather; shoes consisting of wooden soles, and uppers; a clog; a modern fanciful shoe. BROGUE, n. a dialect or peculiar manner of pronunciation, as Irish *brogue*.

BROGLIE, *brō'y'*, ACHILLE LEONCE VICTOR CHARLES, Duc DE: 1785–1870; son of a staff officer in the French army of the Rhine who was guillotined during the French Revolution. He inherited his father's liberal opinions. During the Restoration of 1815 he was active in the advocacy of his views and was summoned to the chamber of peers, where he became a member of the Doctrinaire party, led by Guizot, and distinguished himself by opposition to the court and by his advocacy both of the abolition of slavery and of the theory of constitutional monarchy. In 1816 he married Madame de Stael's daughter. After the revolution of July

BROID--BROILING.

he became foreign sec. in the cabinet of Louis Philippe (1832). He occupied this office two years, with marked diplomatic success. He succeeded in forming a good understanding with England, in obtaining the sanction of the new Greek monarchy from the Powers, and in bringing to a successful issue the efforts for Belgian independence. In 1836 he was made prime minister, but soon resigned, being defeated in the vote on a financial question. He was riding by the side of the king when the attempt at regicide was made by Fieschi, B. receiving one of the bullets through his coat collar. His manners were dictatorial, and he was greatly disliked by the king on this account. His last 20 years were given to philosophy and literary pursuits. It has been observed of him that he was much more conservative in office than when in opposition; he was, however, true to the cause of anti-slavery. After the revolution of 1848 he struggled, but in vain, to check the ambitious schemes of Louis Napoleon, and continued till the end of his days a bitter enemy of the second empire, whose ruin his death prevented him from seeing. In 1856 he was made a member of the French Acad. He was succeeded in the title by Albert de B. his eldest son, also of literary distinction, prominent since 1871 in the national assembly, and for some time the aide of Marshal MacMahon. B. wrote *Ecrits et Discours* (1863) and *Le Libre Echange et l'Impot*, an economical treatise published by his son. Early in life the Duke de B. was one of Napoleon's council of state.

BROID, n. *broyd*: in OE., the older form of **BRAID**, which see. **BROIDED**, a. *broy'déd*, braided. **BROIDERY**, n. *broy'dér-î*, flowery needle-work; embroidery.

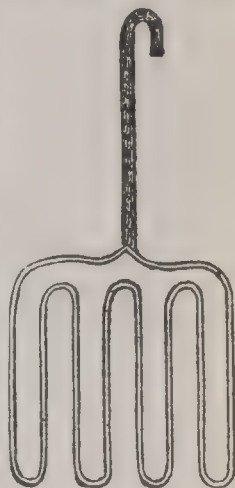
BROIDER, v. *broy'dér* [F. *broder*, to embroider—from *bord*, to welt, to hem]: in OE., to adorn with needle-work; to braid; to embroider. **BROIDERING**, imp. **BROIDERED**, pp. *broy'dérd*.

BROIL, n. *broyl* [F. *brouiller*, to jumble or mix: It. *broglia*; Gael. *broighlich*, noise, confusion]: a jumbled noisy quarrel; a tumult; discord.—**SYN.**: quarrel; difference; dispute; altercation; affray; fray; feud; contention; tumult; discord; dissension.

BROIL, v. *broyl* [F. *brasiller*, to roast on the *braise* or glowing coals: Scot. *brissle* and *brulyie*, to parch or broil: F. *brûler*; OF. *brusler*, to parch, to burn—from It. *brustolare*, to scorch]: to parch or roast by exposure over the fire; to dress meat over a fire on a gridiron; to roast or grill; to be subjected to the action of great heat; to be in a great heat. **BROIL'ING**, imp.: N. the process by which meat is roasted or cooked over a fire. **BROILED**, pp. *broyld*: **ADJ.** cooked by broiling. **BROIL'ER**, n. one who.

BROILING: convenient and expeditious mode of cooking small pieces of meat, by laying them on a gridiron over a bright fire, or even on the coals themselves. This is perhaps the primitive mode of cooking meat. B. is, in fact, a quicker sort of roasting. The albumen of the outside be-

ing sealed up at once, the nutritious juices of the meat are retained; therefore this process is much to be recommended. But to broil meat so as to preserve its flavor, juice, and fat, requires care. The meat should be prepared for the gridiron by being beaten slightly with a rolling-pin, trimmed of superfluous fat and skin, and cut so as to look well on the dish. The fire should be perfectly clear, and of a red-hot surface to answer to the size of the gridiron, that all parts of the meat may be equally cooked. Just before setting the gridiron over, some salt should be sprinkled on the fire to prevent the flare. The gridiron should be perfectly clean and smooth, being always rubbed when it is put away; and, before using, it should be warmed, greased with suet, and rubbed again with paper. When it is placed on the fire, the back should be higher than the front. The meat should never be touched with a fork, but turned rapidly with the broiling tongs; and when sufficiently done, should be served immediately on a very hot dish, being seasoned according to taste. In large ranges there should be a broiling stove, and an apparatus for B. suited to it; by this the heat of the fire can be easily regulated. But for all ordinary purposes, a fire of charcoal, or of common coal, and a grooved gridiron, to preserve the gravy, is all that is necessary. Sometimes a gridiron is used to hang before the fire, when a dinner is being dressed and the top of the fire occupied; this is convenient, but it is an inferior way of cooking, the meat being roasted rather than broiled. There is a form of gridiron well adapted to small low fires, as it is easily put in between the bars (see fig.). B. *under* instead of over the fire is by many deemed a preferable method: it requires a gridiron on a low frame to lift it above the ashes and near the fire.



Gridiron.

BROKE, v. *brök*, pt., BROKEN, pp. *brō'kn* [from BREAK, which see]. BRO'KEN, a. rent asunder; separated into fragments or pieces; rugged; uneven; infirm. BRO'KENLY, ad. *lī*. BRO'KENNESS, n. *-kn-nēs*, state of being broken. BROKEN-HEARTED, a. depressed or crushed by grief or despair. BROKEN-MEAT, the fragments or remains of meat or victuals. BROKEN-WINDED, a. having short breath or disordered respiration.

BROKE, v. *brök* [F. *brocanter*, to deal in second-hand goods: mid. L. *brocam*, retail, as in *vendēre ad brocam*, to sell by retail: Dut. *brack*, damaged: Dan. *brug*, custom, trade: comp. Gael. *breug*, to flatter, to entice]: to transact business in behalf of others, or by means of others. BRO'KING, imp.: N. doing business as a broker: ADJ. pertaining to. BROKED, pp. *brōkt*. BROKER, n. *brō'kēr*, a middle-man in trade transactions; one employed by merchants to buy and sell for them; one who deals in second-hand goods; a pander or go-between; one who engages in discreditable transactions. BRO'KERAGE, n. *-āj*, the fee, wages, or commission paid to

BROKEN KNEES.

a broker for buying or selling for another. **EXCHANGE-BROKER**, one who deals in home and foreign money. **STOCK-BROKER**, one who buys and sells stocks for others. **PAWN-BROKER**, n. one who lends money at interest on goods left with him. **INSURANCE-BROKER**, an intermediate agent who secures for the owners from the underwriters or insurance offices, at a certain rate per cent. that the value of a ship and cargo shall be paid, if lost at sea. **SHARE-BROKER**, one who buys and sells shares.

BROKEN KNEES: an injury to the knee-joints of a horse, caused by a fall. The knee of the horse corresponds to the carpus or wrist of man, and from the peculiar conformation of a quadruped, is much exposed to serious injury by a fall; and even when the wounds are healed, the scar usually remains to indicate that the horse is 'broken-kneed'—thence unsafe, and deteriorated in value.

Causes.—The cause of the injurious fall is usually elsewhere than in the horse. As a rule, the safety of a horse's action is very great, particularly at the age of from four to seven or eight years. Rarely does a horse at any age fall on his knees, unless his feet have suffered from improper shoeing; the animal then moves cautiously, and is very apt to 'stumble.' Undoubtedly, a horse of defective conformation and sluggish disposition is more likely to stumble and fall than a well made, high-actioned steed; nevertheless, the most perfect animal may gradually be rendered unsafe by improper shoeing: see **SHOEING OF HORSES**.

Symptoms.—It is important, as soon as the injury is done, to determine the extent and depth of the wound. If it be merely a superficial wound, the case is a simple one; and unless the skin is much bruised, the hair will grow, and the animal not be permanently blemished. The sheath, however, through which the tendon over the joint passes, may be opened, and the tendon itself injured. The wound is then gaping, heals rather slowly, and sloughs have to be thrown off. Lastly, the joint itself may be opened, and this is indicated by a free discharge of the joint-oil or synovia, and by the bones being seen or felt on probing. The worst form of accident is when the bones of the joint are fractured. The system suffers when the wounds are serious, and severe fever sets in.

Treatment.—Whatever may be the form of injury, the first injunction is to wash the wound thoroughly with cold water applied constantly for hours. The joint will swell, become hot and painful, and in some cases irritative fever occurs. Then the animal should be kept on low diet, and be purged with four, five, or six drachms of aloes, according to its size, etc. Should the wound be deep, much dirt remaining in the tissues, a large linseed-meal poultice should be applied over the joint for a day or two, until free suppuration sets in. If this is retarded, and in all cases when the poultice does not appear necessary, cold fomentations may be continued, using either some infusion of camomile, or one part of tincture of arnica to twelve of water, or one part of Goulard's extract to a similar quan-

tity of water. The severe symptoms speedily subside, unless the bones are fractured or the joint otherwise seriously injured. Usually, the wound heals rapidly, the joint-oil ceases to flow; and in order to insure a contraction of the wound, mild astringent or caustic applications should be used, such as tincture of myrrh, sulphate of zinc lotion, or sulphate of copper in crystal rubbed over it. When the wound is thoroughly healed, the hair may not grow rapidly, even in parts where it should form; in this case its production may be accelerated by the use of a very mild cantharidine ointment, which should act as a mild irritant, but not as a blister. In some cases of severe broken knee, it is advisable to fix the limb so that the animal may not move the joint much. In veterinary jurisprudence, a broken knee is regarded as a *blemish*, not as an unsoundness.

BROKEN WIND: a disease or unsoundness of the respiratory organs of the horse, which, from the French *pousse*, was termed, by some of the old English writers on farriery, *pursiness*. The Germans term it *Dämpfigkeit*, or asthma, though in many of their works it receives also the name of *Herzschlägigkeit*, from a belief that it consists in palpitation of the heart. The nature of the malady is not well understood, though it appears in the form of difficulty in the act of expiration, the horse making an extraordinary or spasmodic effort to expel from the lungs the air which has readily entered them in inspiration.

Symptoms.—A broken-winded horse is usually an animal that does not thrive, is lean, and has a dependent belly, the muscles of which are unusually active as expiratory muscles. The characteristic symptoms are best observed when the horse is exercised, the breathing becoming labored, the nostrils dilated, the eyes bloodshot, and even blue, showing imperfect purification of blood in the lungs. On watching the chest and flank, the ribs are observed very actively moved, and after collapsing, when the air is expelled from the lungs, are further depressed by a spasmodic jerk brought about by the abdominal muscles. A broken-winded horse has a bad cough, of the kind referred to by veterinarians as characteristic of unsoundness, and termed a *hollow cough*. When the animal is oppressed by fast work, or dragging a load up a hill, the pulse is excessively rapid, and the heart beats energetically. Hence, it is regarded by some as a disease of the heart. Others have believed the diaphragm affected, but in reality it is the lungs, or the apparatus for expelling the air from these organs, that is at fault. The diaphragm being a muscle of inspiration, it is probably in no way implicated. No doubt, when the heart is diseased, the function of breathing is sometimes much affected, but these are not the symptoms of true B. W., any more than when the lungs are in part rendered impervious to air, and the act of inspiration is rendered short. This condition constitutes *thick wind*, and is often one of the remote results of inflammatory disease of the lungs.

Causes.—Low-bred horses are liable to B. W., especially if improperly fed on innutritious and bulky food, and at the

BROKER.

same time kept at hard and fast work. Whatever may be the way in which the condition of the alimentary canal operates in producing B. W., of this we are certain, that the function of digestion is much impaired. Indeed, the term B. W. is believed to have had reference originally to the constant escape of flatus. B. W. is far more rare recently than of old, and it is at present most common in those countries where horses are worst managed, and fed almost exclusively on coarse, indigestible, or innutritious kinds of hay and beans.

Treatment.—The treatment of B. W. is unsatisfactory; and only a palliation of the symptoms may be wrought by keeping the alimentary canal in proper order, administering occasional purgatives, and feeding on a proper quantity of the best oats, which should always be bruised; also allowing the horse the best hay in spare quantities—10–12 lbs. daily. Some veterinarians have vaunted their powers in curing this disease, and recommended large doses of camphor, digitalis, and opium; but these potent narcotics operate for only a very short time, and as their effects pass off, the symptoms return, often with increased severity. B. W. is incurable; and horses suffering with it frequently drop down exhausted when at hard work, and die from congestion of the lungs, hemorrhage, or simple suffocation.

B. W. is so bad a form of unsoundness, that horse-dealers sometimes attempt, and even successfully, to hide the defect for the time they may be engaged in the sale of a horse, and this they do by causing the animal to swallow *shot* or *grease*. A certain portion of lead weighing in the stomach has a wonderful effect in diminishing the symptoms, which become again obvious a few hours after the ruse has been practiced on some unwary purchaser.

BROKER [Middle English *brocour*, which occurs in *Piers Plowman* and the *Liber Albus*, formed from the Anglo-Saxon verb *brūcan*, to manage, to contrive; cognate with the German *brauchen*. From the same root is our word *brook*, to put up with anything]: agent employed to make bargains and contracts between other persons, in matters of finance, trade, commerce, or navigation, for a compensation commonly called brokerage. Where he is employed to buy or sell goods, he is not intrusted with the custody or possession of them, and is not authorized to buy or sell them in his own name. In this respect, he differs from a factor (q. v.), and he differs from an auctioneer in two particulars: a B. may buy as well as sell, but an auctioneer can only sell; a B. cannot sell personally at public auction, for that is the appropriate function of an auctioneer, but he may sell at private sales, which an auctioneer (as such) does not. A. B. is strictly a middle-man, or intermediate negotiator between the parties, and for some purposes, he is treated as the agent of both parties, but primarily he is deemed the agent of the party by whom he is originally employed. There are several sorts of brokers: see STOCK-BROKERS; SHIP-BROKERS; BILL-BROKERS; there are also insurance

BROMATOLOGY—BROME-GRASS.

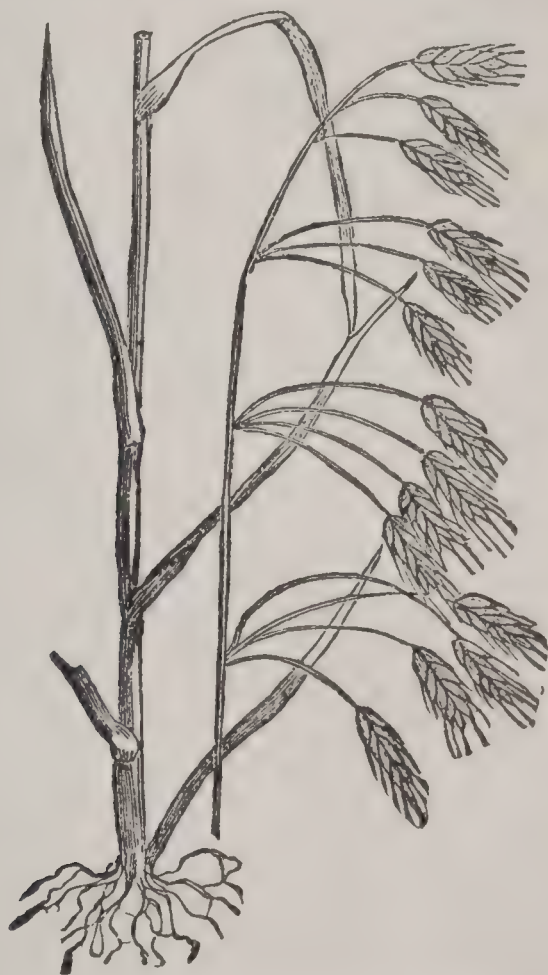
brokers, share brokers, real estate brokers, etc. Persons who appraise goods, sell or distrain furniture for rent, are also called brokers, though differing entirely in their occupations from the preceding commercial agents. The business of a Pawnbroker (q.v.) also is different.

In the United States the term B., used alone, signifies a dealer on commission in money, stocks, or bonds: the business sometimes is carried on in some connection with that of banking in private hands.

BROMATOLOGY, n. *brōm-a-tōl'o-jī* [Gr. *brōma*, gen. *brōmatos*, food; *logos*, a discourse]: a discourse, dissertation, or treatise, on aliments.

BROMBERG, *brōm'běrg*: town of Prussia, province of Posen, 69 m. n.e. from the city of Posen; on the Brahe, about 6 m. from its junction with the Vistula. B. has manufactures of woolens, linen, chicory, tobacco, and Prussian blue; a large sugar-refinery, distilleries, breweries, potteries, and corn-mills. The Bromberg canal, by uniting the rivers Netz and Brahe, connects the Oder and Elbe with the Vistula. Pop. (1880) 34,044; (1885) 36,294; (1890) 41,399.

BROME-GRASS, *brōm-* [Gr. *bromos*, wild oats]: genus of grasses, very nearly allied to **FESCUE** (q.v.), with flowers in



Rye Brome-grass (*Bromus Secalinus*).

lax panicles, glumes many-flowered, the outer palea bifid at the extremity, and awned beneath, and the very short stigma

BROMELIACEÆ.

growing from the face of the germen, beneath its apex. The species are numerous, and some of them are very common British grasses—none more so than the **SOFT B.** (*B. mollis*), an annual or biennial, which has very soft downy leaves, grows well on poor soils, and is readily eaten by cattle, but is not much esteemed by farmers, for either the quantity or quality of fodder which it yields. Its seeds have also the reputation of possessing deleterious or poisonous properties: and those of two other species of this genus, *B. purgans* and *B. catharticus*, the former a native of N. America, and the latter of Chili, are said to be emetic and purgative. The whole subject of the existence of poisonous properties in the seeds of any of these grasses requires further investigation. **Soft B.**, although now disliked by farmers, was formerly sown as a fodder-grass, and its large seeds were even regarded as making hay more nutritious; so that there are some who view its present proscription as requiring a reconsideration. Very similar to it are **SMOOTH B.** (*B. racemosus*), **FIELD B.** or **MEADOW B.** (*B. commutatus* or *B. pratensis*, and *B. arvensis*), all of which seem to resemble it in their properties.—The **TALL B.** (*B. giganteus*, also known as *Festuca gigantea* and *Bucetum giganteum*), native of Britain, which reaches the height of four or even five feet, affords a great bulk of foliage, but is not much relished by cattle. Naturally growing in shady places, it thrives even in dense woods, and is sometimes sown to form covert for game.—**RYE B.** (*B. secalinus*) is generally regarded as a troublesome weed, especially in fields of rye. It is very abundant in some parts of Europe. When young it has great resemblance to rye. Its seeds, which are large, retain their power of germination for years, and do not lose it by passing through the intestines of animals. Deleterious effects have been erroneously ascribed to bread made from rye, with which these seeds had been ground; but poultry are very fond of them, as of those of other species of this genus.

BROMELIACEÆ: a natural order of monocotyledonous plants, allied to *Amaryllideæ* and *Irideæ*, stemless, or with short stems, and rigid, channelled, often spiny and scaly leaves. The flowers are in racemes or panicles; the calyx 3-parted or tubular, persistent, more or less cohering with the ovary; the petals three, withering or deciduous, equal or unequal, imbricated in bud. The stamens are six, inserted into the tube of the calyx and corolla, the anthers opening inward. The ovary is 3-celled, the style single, the fruit capsular or succulent, many-seeded; the seeds with a minute embryo lying in the base of mealy albumen.—The order contains about 170 known species, all natives of the warmer parts of America, although some of them are now naturalized in Asia and Africa. The best known plant of the order, and the only one much valued for its fruit, is the Pine-apple (q.v.). B., with their strong spiny leaves, cover the ground in many places, so as to form impenetrable thickets. Many of them are epiphytic, or grow upon trees, without being parasites, particularly the species of *Tillandsia*, one of which is the New Orleans Moss, Long Beard, or

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Old Man's Beard of the West Indies and of the s. parts of the United States, hanging from the trees like the lichens of colder climates. The leaves of some are so formed and placed as to retain near their base a quantity of water, often affording delicious refreshment to the traveller in a hot climate. The water is, perhaps, of use to the plant in droughts. Not a few of the B. are capable of vegetating long without contact with earth, and of sustaining long drought without inconvenience, for which reason, and because of their beautiful and fragrant flowers, some of them are frequently suspended from balconies in S. America as air-plants. But the plants of this order are valuable more generally for their fibres than upon any other account. *Tillandsia usneoides*, the New Orleans Moss already mentioned, yields a fibre, easily obtained, and in great abundance, which is used instead of hair for stuffing mattresses. The fibres of the leaves of the pine-apple, and of some other species of this order, have been made into fabrics resembling the finest white muslin, while they are found also of sufficient strength for cordage. It is supposed that the produce of different species of *Bromelia* is often included with that of the American Aloe or *Agave* (q.v.), under the name of *Pita* fibre or Pita flax, the appearance and properties of the fibres being very similar, as well as those also of the fibres of the species of *Yucca*. The fibre of the pine-apple is, in some countries, frequently twisted into fishing-lines, and made into nets and into ropes intended for immersion in water, being little liable to injury from this cause. Abundant as the plant is in its native regions, and now so perfectly naturalized as to form thickets in many parts of the old world, there seems no limit to the quantity of this fibre which might be procured.—The Pine-apple cloth of the Philippines is called *Pina muslin* and *Batiste d'ananas*; also sometimes erroneously called *Grass-cloth*. 'With a magnifier, the fibres may be seen to be very numerous and fine, but not twisted at all, as in grass-cloth or the finest muslins and cambrics.' The Philippine pine-apple fibre is obtained from a species called by the Spaniards *pigna* or *pina* (a cone), and which has by botanists been named *Bromelia Pigna*, although some regard it as a mere variety of the pine-apple, with small and rather dry fruit. It grows in great abundance in the Philippine Islands, and is cultivated by the Chinese near Singapore, and the fibre exported to China. This fibre is prepared also in Malacca, Java, Celebes, etc. When bleached, the pine-apple fibre can be spun like flax.—A British patent for this has been taken out.

The WILD ANANAS (*Bromelia Pinguin*) of the West Indies, the *Bromelia Karatas*, common in S. America, the *B. Sagenaria*, common in some parts of Brazil, and the *Billbergia variegata*, which grows in wild luxuriance in Mexico, where it is called *Caroa*, often covering miles of country—all yield fibres which are used for cloth, cordage, nets, etc. The fibre of *Bromelia Sagenaria* is known as *Curratow* fibre: very strong ropes are made of it.

The genus *Bromelia* has a 3-parted calyx shorter than the

BROMIC ACID—BROMINE.

corolla, and the fruit is succulent. The species are numerous, the leaves of all of them are more or less characterized by spiny serratures. The fruit of *B. Pinguin*, already mentioned, affords a cooling juice, used in the West Indies mixed with water, as a drink for patients in fever and dysentery. It is said to be diuretic. A vinous liquor is sometimes made from it.

BROMIC ACID, *brō'mĭk*: only known compound of bromine and oxygen: prepared by acting upon bromine (Br) by caustic potash (KO), when much bromide of potassium (KBr) is formed, accompanied by bromate of potash (KOB₃O₅), a compound of potash and B. A. It likewise combines with silver, lead, and mercury, yielding salts styled Bromates.

BROMINE, n. *brō'mĭn* [new L. *bromĭŭm*—from Gr. *brōmos*, a bad smell]: a metalloid, an elementary body related to chlorine and iodine in its chemical properties. **BROMAL**, n. *brō'māl*, a dark, brownish-red, heavy liquid, having a strong peculiar smell; an oily colorless fluid, obtained by the action of bromine on alcohol. **BRO'MIC ACID**, *-mĭk*, a compound of bromine and oxygen. **BRO'MATE**, n. *-māt*, a compound of bromic acid with a base. **BRO'MIDE**, n. *-mĭd*, a compound of bromine with a metal; alkaline bromides crystallize in cubes or right-angled prisms; they are easily soluble in water. Bromide of sodium is a favorite quieting medicine in cases of nervousness, whose safety in the excessive use now common begins to be questioned by physicians. **BRO'MITE**, n. *-mīt*, or **BROMIC SILVER**, an ore of silver occurring in olive-green grains. **BRO'MOFORM**, the ter-bromide of formyl, analogous to iodoform and chloroform; sym. CHBr₃; a heavy volatile liquid. **BROMURET**, n. *brōm'ū-rēt*, a basic compound of bromine and another element.

BROMINE, *brō'mĭn* (symb. Br; equiv. 80; spec. grav. 2.96): one of the chemical elements; occurs in combination in sea-water to the extent of about 1 grain to the gallon. It is more abundant in certain saline springs, especially at Kreuznach and Kissengen in Germany. It is present also in water and land-plants and animals. In the extraction of B. from concentrated sea water, from which common salt has been separated in quantity, and which is then called *bittern*, or from salt springs, the liquor—which contains the B., as bromide of magnesium (MgBr)—has a stream of chlorine gas (Cl) passed through it, which forms chloride of magnesium (MgCl), and liberates the bromine. The liquid thus becomes of a more or less yellow tint, and if it be then agitated with ether, and allowed to settle, the latter floats up the B. The ethereal solution is then treated with potash, which principally forms bromide of potassium (KBr), and fixes the B., so that the ether may be distilled off. The residue is then treated with oxide of manganese and sulphuric acid in a retort with heat, which results in the liberation and distillation of pure B. It exists as a deep red liquid of density 2.966 (nearly 3), which readily evolves red fumes very irritating and suffocating. It is very poi-

BROMLEY—BRONCHI.

sonous, actually destroying the animal tissues. It is sparingly soluble in water, more so in alcohol and ether, and its water solution possesses great bleaching properties. When raised to the temperature of $145^{\circ}\cdot4$ F., it boils, and reduced to $9^{\circ}\cdot5$ F., it becomes a red crystalline solid. B. combines with great rapidity with metals, occasionally with ignition, as with antimony, and forms a class of salts. Treated with hydrosulphuric acid, B. yields hydrobromic acid (HBr), which is the analogue of hydrochloric acid, as B. is of chlorine.

BROMLEY: town in England, 10 m. s.e. of London; it contains the palace of the bishop, to which bishopric the manor has belonged since abt. 600. St. Blaize's well, in the palace garden, was famous prior to the Reformation. At B. are several institutions of learning or charity, and a college for the residence and support of clergymen's widows, founded by Bp. Warner 1666.

BROMLEY, WILLIAM: 1769–1842; b. Carisbrooke, in the Isle of Wight: English engraver of moderate repute. He engraved portraits of Wellington and Napoleon, which brought him into public notice, but was known mostly by his illustrations to Macklin's edition of the Bible.

His son, **JOHN B.** (b. Chelsea, d. 1839), was a noted and successful engraver in mezzotint. **WILLIAM B.**, another of the family, was an engraver, and landscape and *genre* artist. Still another of the family, **VALENTINE B.** (1848–77, son of the last William B.), received a gold medal at the exhibition of paintings, 1877, and was on the staff of the *London Illustrated News*. *The Fairy Ring* is the best specimen of his work in oil.

BRÖMSEBRO, *brēm'sě-bró*: village of Sweden, in the län, and 27 m. s. of the town, of Calmar: the place where treaties were entered into between Sweden and Denmark, 1541, 1641, and 1645.

BROMSGROVE, *brōmz'grōv*: market-town of Worcester-shire, Eng., near the small river Salwarp, 12 m. s.s.w. from Birmingham; $1\frac{1}{2}$ m. e. from a station on the Birmingham and Bristol railway. The Birmingham and Worcester canal also passes near it. It is in a highly cultivated and richly wooded valley: The principal street is about a mile in length. There is a very flourishing grammar-school, founded by Edward VI. 1553. The linen manufacture was formerly carried on at B.; button-making and nail-making are at present the principal industries. Pop. (1871) 6,967; (1881) 7,959; (1891) 7,934.

BRONCHI, n. plu. *brōng'kī*, or **BRONCHIA**, n. plu. *brōng'kī-ă* [Gr. *brongchos*, the windpipe; *brong'chĩa*, the bronchia]: the tubes that branch off from the windpipe to the lungs; the subdivisions of the trachea or windpipe. Opposite the third dorsal vertebra, the latter divides into two branches or B., of similar structure to itself—namely, round and cartilaginous in front; and flat, with muscular and fibrous tissue behind, lined with mucous membrane. Of these B., one goes to each lung, the right being little more

than an inch; the left, about two inches in length. On entering the substance of a lung, the B. divide into smaller branches, which again subdivide, until they are no larger in diameter than one-fiftieth to one-thirtieth of an inch, which give origin to, or terminate in, small polyhedral cells, which seem to cluster round their extremities, and open into them. These are the air-cells; they consist of elastic tissue, with a lining of mucous membrane, and beneath the latter, a layer of minute blood-vessels of the lung: see RESPIRATION, ORGANS AND PROCESS OF. BRON'CHIAL, a. -*kī-āl*, or BRON'CHIC, a. -*kīk*, pertaining to the bronchi. BRONCHIOLE, n. *brōng'kī-ōl*, a small bronchial tube. BRONCHI'TIS, n. -*kī'tis* [*itis*, denoting inflammation]: inflammation of the air-tubes or bronchi that lead to the lungs. BRONCHITIC, a. *brōng-kīt'īk*, of or pertaining to bronchitis. BRON'CHOCELE, n. -*kō-sēl* [Gr. *kēlē*, a tumor]: a tumor on the fore part of the neck, due to an enlargement of the thyroid gland—also called *goitre*. BRONCHOT'OMY, n. -*kōt'ō-mī* [Gr. *tomē*, a cutting]: an incision into the windpipe between the rings—when the trachea is cut the operation is called *tracheotomy*—and when the larynx, *laryngotomy*. BRON'CHUS, n. -*kūs*. BRON'CHI, n. plu. -*kī*, one of the subdivisions of the trachea or windpipe. BRONCHOPH'ONY, n. -*kōf'ō-nī* [Gr. *phonē*, voice]: the muffled and indistinct speech of any one laboring under a bronchial affection.

BRONCHITIS, *brōng-kī'tis*: inflammation of the lining membrane of the bronchial tubes; a common disease which, neglected, may destroy life, and, carelessly treated, may involve grave and permanent injury. The first symptoms are generally those of a common 'cold'—viz., shivering, headache, and sense of weariness, with occasional cough; but the cough continues, and recurs in paroxysms; there is a feeling of oppression on the chest, and the person *wheezes* when he breathes. He also breathes more rapidly, six or ten respirations in the minute more than in health, and his pulse is quicker; and the ear applied to his chest, after these symptoms have continued two or three days, will hear a rattling, as if air was bubbling through thickish fluid, which is the case; he is breathing through an extraordinary amount of mucus secreted by the inflamed lining membrane of the tube. During his paroxysms of cough, this mucus is spit up. If the inflammation extend no further, it is termed *tubular B.*, and is seldom a fatal disease in the first attack; but, as may be expected, it will often extend, or, in some cases, begin in the small tubes—*vesicular B.*—when the symptoms just described will be present, but in a greater degree, the breathing being so embarrassed that the patient can no longer lie down, but requires to sit or stand up, and use all his muscles of respiration. Though he coughs, he expectorates very little, till about the third day, when he expectorates large quantities of yellow fluid. At last, prostration becomes so complete that he ceases to expectorate, and dies suffocated by the accumulated mucus, from the fifth to the seventh day. In less severe cases, or those which yield to treatment, the delicate tubes may be permanently injured by the in-

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flammation. They may be thickened, which narrows them caliore; this will prevent the proper passage of the air, and gives rise to wheezing on any exertion, and cough, especially in winter. Moreover, after repeated attacks, one of the tubes may be blocked up entirely, so that the portion of lung to which it ought to conduct air, is no longer filled, and consequently collapses and wastes. This compels the adjacent tubes and air-cells to dilate to receive more air at the expense of their elasticity (emphysema, q.v.); the air-cells may even burst, and so by degrees the apparatus for aërating the blood becomes less and less perfect. The treatment of B. must vary with the patient's constitution; but in most cases, counter-irritation, applied through the medium of mustard or hot turpentine fomentations, will be found useful. These remedies act more rapidly than a blister, and may be frequently repeated. It should be remembered that patients suffering from B. are very easily depressed. Such medicines as ammonia should be given, to promote expectoration, combined with the liquor ammoniæ acetatis, to produce perspiration. In very acute cases, after a brisk purge, salines, with ipecacuanha or squills, may be given, and an emetic will remove accumulations of mucus.

In the B. of old persons, chloric ether will be found useful, and may be combined with sedatives, as henbane; but opium must be given with great caution, or not at all, as it tends to increase the congestion of the inflamed tubes. The paregoric elixir (compound tincture of camphor) is an old and popular remedy in B.; but there is danger in tampering with B., and a physician should be immediately called, to determine, by the stethoscope, not only the disease but its exact situation; and as it is likely to recur at some future period, or symptoms caused by it to appear, a skilled opinion has a permanent value to the patient. See CATARRH.

BRÖNDSTED, or BRÖNSTED, *brøn'stēd*, PETER OLUF: 1780, Nov. 17—1842; b. near Horsens, Jütland: archeologist. He studied at the Univ. of Copenhagen; and, 1806, went to Paris, where he remained two years. He afterward went with Baron Stackelberg's expedition to Italy and Greece, where he made excavations which furnished valuable materials for the study of classical antiquity. Returning, he was made prof. of Greek in the Univ. of Copenhagen. Afterward he was Danish envoy at Rome. In 1832 he became prof. of archeology and philology at Copenhagen, and 1842 rector of the univ. B.'s principal work is *Travels and Researches in Greece* (2 vols., Paris, 1826). In addition to several smaller archeological papers, among which was one in English, entitled *An Account of some Greek Vases found near Vulci* (Lond. 1832), and another on the bronzes of Siris, which appeared at Copenhagen, 1837, B. wrote some valuable contributions to Danish history from mediæval Norman manuscripts (2 vols., Copenh. 1817-18), and *Manners of Greece during the Years 1827 and 1828* (Paris, 1835).

BRONGNIART, *brōng-yâr'*, ADOLPHE THEODORE: 1801-76; son of Alexander B.: was author of several botanical works held in high esteem: in 1833 became prof. of botany

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at the Jardin des Plantes, Paris, and 1834 member of the Acad. of Sciences. In 1852 he was elected a foreign member of the Royal Soc. of London.

BRONGNIART, *brōng-yâr'*, ALEXANDER: 1770–1847, Oct. 14; b. Paris: chemist and naturalist. He is said to have delivered a lecture on chemistry before the age of 15. In 1790, he visited England for a scientific examination of the Derbyshire mines and pottery works, and, on his return, published a *Mémoire sur l'Art de l'Emailleur*. Appointed in 1800 director of the porcelain manufactory at Sèvres, he held that office for the remainder of his life, and revived the almost lost art of painting on glass. In his *Essai d'une Classification des Reptiles*, 1805, he established the four divisions of reptiles, and first gave them the names of *Saurians*, *Batrachians*, *Chelonians*, and *Ophidians*. His *Traité Élémentaire de Minéralogie*, published 1807, at the instance of the Imperial Univ., became a text-book for lecturers. In 1814 appeared his *Mémoire sur les Corps Organisés Fossiles nommés Trilobites*, a name which, as well as a basis of classification for those singular *crustacea*, naturalists owe to B. In 1815 he was elected a member of the Acad. of Sciences of the French Institute; he was also a member of the Royal and Geological Societies of London, and of other learned bodies. In 1845, appeared his *Traité des Arts Céramiques*.

BRONI, *brō'nē*: town of n. Italy, province of Pavia, about 11 m. s.e. of the town of Pavia, in a beautiful situation at the foot of the Apennines. It has a singular old church, some portions of which date from the 10th c. In its vicinity is the castle of B., celebrated in history as the place where Prince Eugene obtained a victory over the French 1703. Pop. about 7,000.

BRONN, HEINRICH GEORG: 1800, Mar. 3—1862; b. Ziegelhausen: German naturalist. He was educated at Heidelberg Univ. In 1828, he commenced at Heidelberg a course of lectures on the physical and industrial sciences, and in 1833 was nominated ordinary professor of the same. After Leuckhardt's departure from Freiberg, B. was appointed to the zoological lectureship. He wrote several important scientific treatises. His first was *A System of Antediluvian Conchylia* (Heidelberg, 1824), which was followed by *A System of Antediluvian Zoophytes*. In 1824, he visited s. Europe; and in 1827, made a second journey to Italy. On his return, he published the results of his journey (2 vols., Heidelberg, 1825–30). In 1834 appeared his most important geological work—*Lethæa Geognostica*; in 1841–49 his *History of Nature*; and in 1850, his *Universal Zoology*, the first attempt to develop zoology in its entirety with reference to extinct organisms.

BRONNER, JOHANN PHILIPP: 1792–1865: German writer and authority on wines, who gave years to the study of their nature and production, and published more than a dozen treatises concerning the culture of the vine and the manufacture of wines. In 1831 he established a school for teaching the art of manipulating the grape. More recently he was commissioned by Baden to travel over the continent

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and to visit and inspect all the grape-growing countries. This he did, and made voluminous and careful reports on the results.

BRONTE, *brŏn'tā*: town in the province of Catania, Italy, at the western base of Mount Etna, about 22 m. n.n.w. of the city of Catania. B. has manufactures of woolen and paper, and the district produces oil, almonds, wine, etc. But the town is noted chiefly for its connection with Admiral Lord Nelson, who was created Duke of B. by the Neapolitan government 1779, with an annual income of 6,000 *oncie* (about \$18,750). Pop. (1881) 16,427; (1896) 18,000.

BRONTE, **CHARLOTTE**: 1816, Apr. 21—1855, Mar. 31; **b.** Thornton, in the West Riding of Yorkshire: novelist. Her father, a clergyman of Irish descent, removed, with six young children and an invalid wife, from Thornton to Haworth in the same county, in 1821. Soon after their arrival, Mrs. B. died, so that Charlotte, in after-life, could but dimly remember her mother. Her father, eccentric and solitary in his habits, and with extravagant theories for making his children hardy and stoical, was ill fitted to replace a mother's love. When Charlotte was eight years old, she was sent with three of her sisters to Cowan's Bridge School, which, whether deservedly or not, received unfortunate notoriety 25 years later in the pages of *Jane Eyre*. Her two eldest sisters falling dangerously ill, and dying a few days after their removal thence, and the low situation evidently disagreeing with Charlotte's health, she was sent home when little more than nine, and remained there, 'the motherly friend and guardian of her younger sisters,' till 1831, she was sent to Miss Wooler's school at Roe Head, where her genius was appreciated by her kind instructress, and life-long friendships formed with some fellow-pupils. A few years later, she returned to Miss Wooler's school as teacher, and also had some sorrowful experiences as governess in one or two families. It was with a view of better qualifying themselves for the task of teaching that Charlotte and her sister Emily went to Brussels 1842, and took up their abode in a *pensionnat*. When Charlotte returned home 1844, a new shadow darkened the gloomy Yorkshire parsonage. Her father's sight was declining fast, and her only brother was a source of continual anxiety. It now seemed plain that school-keeping could never be a resource, and the sisters turned their thoughts to literature. Their volume of poems was published 1846; their names being veiled under those of Currer, Ellis, and Acton Bell, but it failed to get public attention. Charlotte's next venture was a prose tale, *The Professor*, and while it was passing slowly and heavily from publisher to publisher, *Jane Eyre* was making progress. In 1847, Aug., it was submitted to Messrs. Smith & Elder, and published by them two months later. It took the public by storm. It was felt as the work of a fresh hand, making new harmonies. Henceforward, Charlotte had a 'twofold life, as author and woman.' Over the latter, the clouds closed thicker and thicker. Mr. B. had indeed recovered his sight; but the sister that Charlotte so

BRONTERN—BRONZE.

intensely loved, and whose genius she ever delighted to exalt above her own, Emily—the Ellis Bell of *Wuthering Heights*—died in 1848. Her only brother also died in the same year; and Anne, the youngest of the family, following 1849, Charlotte was left alone with her aged father in that dreary deserted home among the graves. Nevertheless, her energy never flagged. *Shirley*, begun soon after the appearance of *Jane Eyre*, was published in the autumn of 1849; and *Villette*, written under the frequent pressure of bad health and low spirits, came out in 1852. In the spring of 1854, Charlotte was married to her father's curate, the Rev. A. Nicholls, who had long known and loved her. It is a relief to find that a little bright sunshine was permitted to the close of a hitherto clouded life. It was brief; for serious illness set in, and in the following spring she died. A fragment of an unfinished novel appeared in the *Cornhill Magazine*, 1860, Apr. See Mrs. Gaskell's *Life of C. B.*, (1857).

BRONTERN, n. *brōn'tĕrn* [Gr. *bronte*, thunder]: a brass vessel in the basement below a stage, to produce an imitation of thunder.

BRONTOTHERIDÆ, n. plu. *brōn'tō-thĕr'ĭ-dē* [Gr. *brontēs*, a giant; *therion*, a beast]: an order of extinct tertiary mammals.

BRONZE, n. *brōnz* [F. *bronze*—from It. *bronzo*, bronze—from *bruno*, brown: Sp. *bronce*, bronze, pan-metal: Icel. *brasa*, to braze or solder]: a metallic substance principally made of copper and tin, with sometimes a small quantity of lead or zinc; a color to imitate bronze; any figure or medal made of bronze is called a *bronze*, especially ancient ones: V. to imitate bronze by a coloring matter. **BRON'-ZING**, imp.: N. the art or act of giving to articles the appearance of bronze. **BRONZED**, pp. a. *brōnzd* [prov. It. *bronze*, glowing embers, bronze]: colored like bronze; tanned; sunburnt. **BRON'ZY**, a. *-zĭ*, like bronze. **BRON'ZITE**, n. *-zīt*, a variety of diallage or schiller-spar, so called from its metallic lustre and pinchbeck color. **BRONZE-POWDER**, a metallic powder used to give to tin and iron goods, etc., a bronze-like appearance.

BRONZE: reddish-yellow, fine-grained alloy of copper and tin, in variable proportions. It was early known, and what is usually spoken of as the *brass* of the ancient nations, was in reality bronze. The brass or B. referred to in the Bible was probably composed of copper and tin, though some translators consider it likely to have been copper alone. The examination of the most ancient coins and metallic ornaments and implements leaves no doubt as to the acquaintance of the ancients with B.; so much so, that in the antiquarian history of European nations, there is a distinct period styled the *Bronze Period* (see **BRONZE, AGE OF**). At the present time, B. is largely used for house and church bells, Chinese gongs, ordnance or cannon metal, and speculum or telescope metal. In the preparation of the various kinds of B., great care must be taken to keep the tin from being burned away or wasted. To obviate this, it is cus-



Irish Brogues.

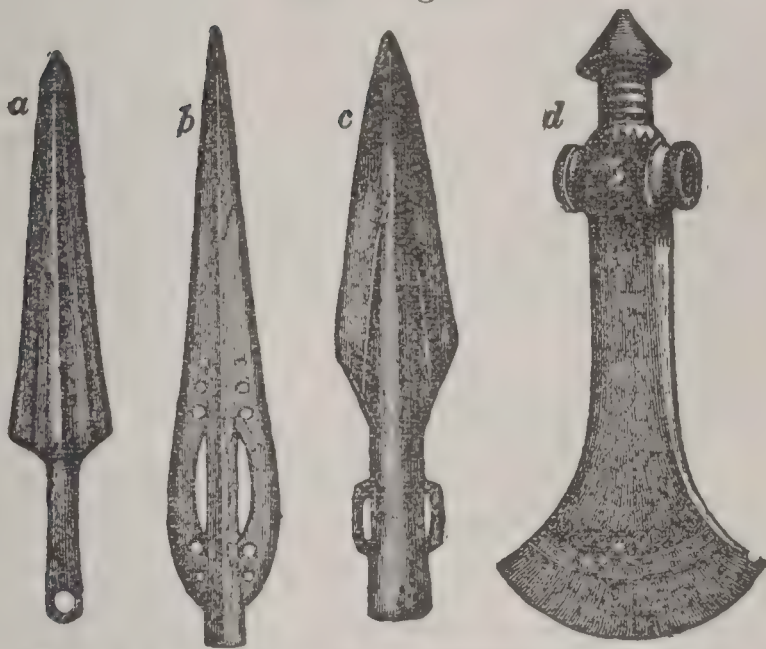


Fig. 1.—*a*, Tanged bronze spear-head 10 1-2 inches in length; *b*, Socketed bronze spear-head, 19 inches; *c*, Looped bronze spear-head, 9 inches in length; *d*, Danish battle-ax, 15 inches.

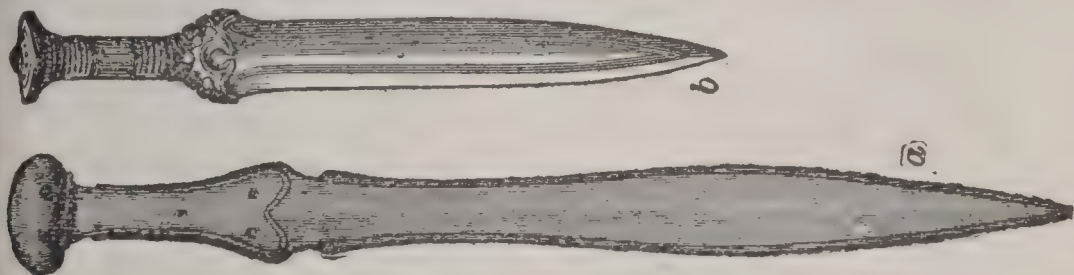


Fig. 2.—*a*, Bronze sword found in Edinburgh, 20 inches in length; *b*, Danish bronze dagger, 13 inches in length.

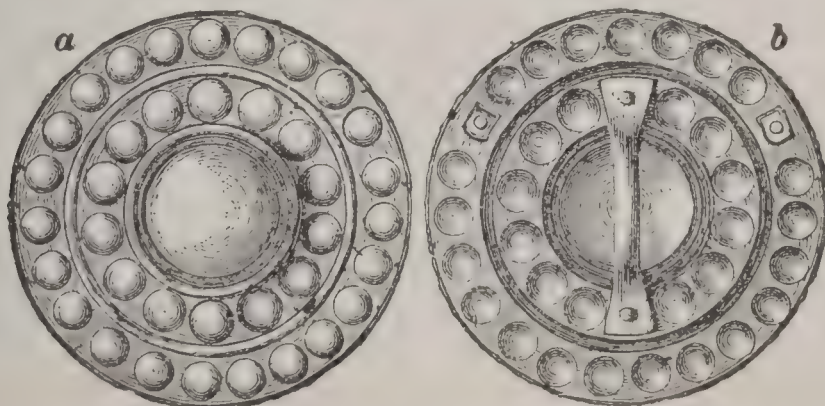


Fig. 3.—Bronze shield (*a*, front; *b*, back view), 13 1-2 inches in diameter.

BRONZE.

tomary to use much old B., as worn-out cannon, etc., and when that is fused in the furnace, to add the new copper and tin. The best Cornish and Banca tin are employed for the better kinds of castings, especially where strength of alloy is required. For inferior work, old scrap tin, which often contains lead, is used; and where strength of material is not an object, a little zinc and lead are added. In either case, during the fusion of the mixed metals in the furnace, at a high temperature, as little air as possible must be admitted to the furnace, otherwise the metals are oxidized, and the alloy is deteriorated. B., when well made, is, excepting gold, platinum, and some of the rare metals, the most durable metallic material known; and this, coupled with its extreme hardness, rendering it difficult for time and ordinary wear and tear to efface inscriptions or medallions stamped on it, led the mint in France, some years ago, to issue B. coinage in place of copper; since 1860 B. coinage has taken the place of copper in Great Britain.

The principal varieties of B. have the following average composition:

		Copper.	Tin.
Brass ordnance or bronze cannon,		9	1
Bronze for toothed wheels,		10	1
“ for mathematical instruments,		12	1
“ for bearings of machinery,		8	1
Chinese gongs and cymbals,		5	1
Musical bells,		6	1
House bells,		4	1
Large bells,		3	1
Telescope or speculum metal,		2	1
Ancient.	Mirrors,	2	1
	Hard bronze,	7	1
	Medium bronze,	8	1
	Soft bronze,	9	1
	Flexible bronze nails,	20	1

Recently, B. has been deposited on small statues and other articles, in greater or less thickness, by the electrotype process (see GALVANISM), forming very pleasing ornaments if of cheaper rate than ordinary B. The same process has been suggested for coating those parts of machinery which are liable to rust.

The novel word *steel-bronze* first began to be common about 1875, when Uchatius devised a new method of hardening the old bronze of the Austrian guns. This steel-bronze, with which Austria is mainly armed, has accordingly no steel in it; but is almost as hard as cast steel, and was for Austria about 75 per cent. cheaper than steel. *Silico-bronze* and *phosphorus-bronze* are copper alloyed with silicon and phosphorus respectively, and are used for conducting electricity. *Manganese-bronze* is a valuable material for making screw-propellers. Aluminium (q.v.) also forms several valuable alloys with copper.

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BRONZE, AGE OF: in Archeol., the second of the three successive periods into which, as some modern writers hold, the primitive or prehistoric antiquities of a country may be divided. They take for granted that among a rude or savage people, stone would come into use before any kind of metal; and that of metals, copper being oftener found ready for the hammer, would come into use before iron. These assumptions—which accord with what has been observed among uncivilized races—have obtained from a very early date. Lucretius, writing in the c. before the Christian era, recorded them with his usual vigorous precision (*De Rer. Nat.*, v. 1282). More than one antiquary of the last c. appears so have suggested the distribution of archeological objects into eras of stone, of copper or bronze, and of iron. But the proposed classification received scarcely any attention until about 50 years ago, when it was adopted and developed by C. J. Thomsen, supt. of the Ethnographical and Archæological Museum of Copenhagen, in his *Ledetraad til Nordisk Oldkyndighed* (Kjöbenhavn, 1836), and by Mr. Nilsson, prof. of zoology in the Univ. of Lund, Sweden, in his *Skandinaviska Nordens Urinvånare* (Lund, 1838–43). According to the theory of these writers—held by almost all archeologists in Denmark, Sweden, and Norway, by many in n. Germany and in Switzerland, and by a few in other parts of Europe—the first three stages in the progress of a nation from barbarism to civilization are as clearly identified and defined by their relics of stone, of bronze, and of iron, as the comparative antiquity of geological strata, or of periods of the world's creation, is determined by the fossils which they are found to contain.

The name of the 'age of stone' is given to the period when weapons and implements were made of stone, amber, wood, bone, horn, or some such easily wrought material, and during which very little or nothing was known of metals. During this era, the people, few in number, and savage in their habits, clothed themselves chiefly with skins of animals. They buried their dead in large sepulchral chambers, covered by what have been called *eromlechs*, or girdled round by the unhewn stone pillars called 'Druidical circles.' The bodies have most frequently been found unburned, often with rude urns beside them.

During the 'age of B.' weapons and implements were made of copper or of bronze, and iron and silver were little or not at all known. The dead were burned, and their ashes kept in urns, or deposited in stone-chests, covered by conical mounds of earth or heaps of loose stones. In the urns, articles of gold and amber are found, but never of silver. Most articles of metal appear to have been cast; where marks of the hammer appear, it is contended that the forging or beating must have been by a stone hammer upon a stone anvil.

The 'age of iron' is the name applied to the third and last of the three supposed periods. During this era, it is conceived that iron displaced bronze in the manufacture of weapons and implements, and that silver and glass came

into use. The dead were still occasionally burned; but they were frequently buried without burning, often seated on chairs, and, at times, with a horse in full war-harness laid beside the body of his master.

The Scandinavian and German antiquaries admit that their three periods run, more or less, one into another; that stone weapons continued to be used throughout the age of B.; that bronze and gold were not unknown in the age of stone; and that weapons of stone and bronze continued to be used in the age of iron. This admission obviously detracts much from the practical value of the classification for chronological or other scientific purposes. But the late J. M. Kemble, and other British antiquaries, have taken objections to the classification altogether, as irreconcilable with generally admitted facts, when carried out to its strict and necessary consequences. They point to the everyday discovery of objects of stone, bronze, and iron, in the same ancient urns, graves, and dwellings. They instance the case of the Huns, who had swords of iron, while they pointed their arrows with bones; the case of the Anglo-Saxons, who fought with stone mauls at Hastings; and the case of the Germans, who used stone hammers in the Thirty Years' War. They show stone weapons, in some of which the traces of metal are still fresh, while others attest for themselves that they could not have been cut but by a thin sharp metal point.* They prove from Greek and Roman writers that the nations of the n. and w. of Europe used iron weapons during what must have been their B. age. And they repudiate the proposed appropriation of different modes of burial to the different ages—a point on which the supporters of the theory appear hopelessly divided among themselves—on the ground, that graves assigned to the bronze period have been found to contain more iron than bronze, and that other supposed characteristics of sepulchres of the bronze age are quite as common in sepulchres of the iron age. But although the threefold classification of the Scandinavian and German archeologists cannot be relied upon for historical uses, it may be accepted as a very convenient mode of arranging archeological objects. It has been adopted, with some modifications, in the gallery of British antiquities in the British Museum at London, in the National Museum of the Antiquaries of Scotland at Edinburgh, in the Museum of the Royal Irish Acad. at Dublin, and in other collections, where the articles are classed, for the most part, according to the materials of which they are made.

* M. Frederic Troyon, of Lausanne, one of the Swiss antiquaries who accept the three periods of their Scandinavian brethren, instances certain stone axes (now in the collection of Baron Renberg, at Prague), which were found, with their cores, at the site of a primitive manufactory of these weapons in Bohemia. 'These cores,' he says, 'when replaced in the holes from which they had been taken (easily verified by the corresponding veins of the stone), left so little play-room, that it was evident they could only have been detached by a metal point, and not by a hollow cylinder, which could not have given to the hole its conical form, now quite apparent. Instead of the soft iron now employed in such operations, the ancients used copper or bronze; and, of course, water and siliceous sand were likewise employed in the process.'

BRONZE-WING—BRONZING.

BRONZE - WING, or **BRONZE - WINGED PIGEON**, or **BRONZE PIGEON**: names given in the Australian colonies to certain species of pigeon (see **PIGEON** and **COLUMBIDÆ**) chiefly of the genus *Peristera* of Swainson, on account of the lustrous bronze color with which their wings are variously marked. They are otherwise also birds of beautiful plumage.—The **COMMON B.** or **Bronze-winged Ground Dove** (*Columba* or *Peristera chaleoptera*) is distributed over all the Australian colonies. It is often seen in flocks, feeds on the ground, and builds its nest chiefly on low branches of trees growing on meadow-lands or near water. It is a plump bird, often weighing fully a pound, and is acceptable at table.—The **BRUSH B.** or **Little Bronze Pigeon** (*C.* or *P. elegans*) is not so plentiful nor so widely distributed, chiefly inhabiting Tasmania and s. Australia. It inhabits low swampy grounds, never perches on trees, resembles a partridge in its habits, and makes a loud burring noise like a partridge when it takes wing on being alarmed.—The **HARLEQUIN B.** (*C.* or *P. histrionica*) is found in the n.w. parts of New South Wales in great flocks, feeding on seeds.—Some of the species of *Geophaps*, another of the genera or sub-genera of the *Columbidae*, also are sometimes called **B. W.** Their partridge-like appearance and habits have gained for them the name of **Partridge Pigeon** (q.v.)

BRONZING: process of covering plaster or clay figures, and articles in ivory, metal, and wood, to give them the appearance of bronze. Several of the materials employed are of little value, while others are expensive. Thus, *gold powder* is used for the finer work, and is prepared by grinding gold-leaf with honey on a stone slab till a very fine state of division is attained, then washing out the honey, and drying the gold powder. Inferior gold leaf, or that which contains much silver and copper, yields the *German gold powder* employed in bronzing. *Copper powder* is prepared by introducing an iron bar or plate into a solution of copper, when the latter metal is precipitated as a finely divided red powder. *Mosaic gold*, or *musivum*, is made by fusing 1 lb. of tin, introducing $\frac{1}{2}$ lb. mercury, allowing the alloy or amalgam to cool, then pulverizing and grinding up with $\frac{1}{2}$ lb. sal-ammoniac, and 7 oz. sublimed sulphur. Ultimately, the whole is subjected to the process of sublimation, when the tin, as a brilliant yellow powder, resembling gold, is left in the subliming vessel. The color of mosaic gold may be deepened by the addition of red oxide of lead, and it then assumes a copper tint. *Gold size* is prepared by heating 1 lb. of linseed oil, and gradually adding 4 oz. of gum animi in very fine powder. When boiled sufficiently, it assumes the consistence of tar, and may then be strained through cloth. When employed in bronzing, some vermilion is added to make it opaque, and turpentine to make it thin and limpid enough to be easily laid on the plaster cast or other article with a brush, and the object may ultimately be rubbed over with soft chamois leather, which is occasionally dipped into the gold size. The other **B.** powders are

BROOCH.

best laid on with a solution of gum arabic or isinglass, either of which acts as a cement.

Gun-barrels are bronzed by acting upon them with the chloride or butter of antimony (*bronzing salt*), or with hydrochloric or nitric acids, when the surface of the iron is partially eaten into, and covered with a thin film of oxide; after which the gun-barrel is thoroughly cleaned, oiled, and burnished. A brownish shade is thus communicated to the barrel, which protects it from rust, and at the same time renders it less conspicuous to an enemy or to game. In the bronzing operation known as the Damascus, the barrel is treated with dilute nitric acid and vinegar, to which sulphate of copper has been added. The result is, that metallic copper is deposited irregularly over the iron surface; and when the latter is washed, oiled, and well rubbed with a hard brush, the barrel has a mottled wavy appearance. Articles in wood are first coated with a mixture of size and lampblack, and dried, and then a bronze powder, consisting of very finely divided patent yellow, raw umber, pipe-clay, lampblack, and Prussian blue, is put on with a brush. After being dried again, the article is burnished with cloth or leather, covered with a layer of castile soap, and, lastly, cleaned with a woollen cloth. Copper vessels, coins, etc., are bronzed by heating them in a copper boiler containing vinegar, with 2 parts of verdigris, 1 of sal-ammoniac dissolved in it, when, after sufficient boiling, a pleasant reddish-brown hue is imparted. Bronze and copper articles may take an antique appearance by treatment with a solution of sal-ammoniac 1 part, cream of tartar 3, common salt 6, hot water 12, and more or less nitrate of copper, when an ancient greenish hue is obtained.

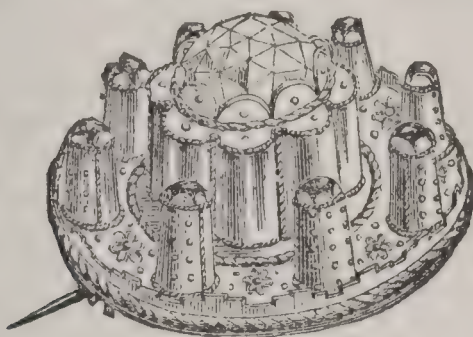
BROOCH, n. *bröch* [Sp. *broca*, a tack or button; *broche*, a clasp: OF. *broche*, a spit—from mid. L. *brocca*, a pointed stick (see BROACH)]: a pin or clasp to hold the parts of the



Hunterston Runic Brooch.

dress together; an ornamental jewel, with a pin fastened at one end with a hinge or joint, at the other with a hook, stuck in a woman's dress on the breast; a jewel: V. to adorn with jewels. Brooches were much used in antiquity, and

varied in form as much as in modern times. They were worn both by men and by women for ornament and use, from the time of Homer to the fall of the Western Empire. In the early middle ages, and even among semi-barbarous tribes, the art of making *fibulæ* seems to have attained marvellous perfection. Many of those found in Ireland and Scotland are wonderfully beautiful in workmanship, and still more so in design; and it is doubtful whether antiquity has left us anything in the way of personal ornament more perfect than the so-called Hunterston B., of which a woodcut is reproduced. It was found 1830, on the estate of Hunterston, in the parish of West Kilbride, Ayrshire, near the scene of a conflict which preceded the battle of Largs 1262. It is of silver, richly wrought with gold filigree, and elaborately chased with lacertine and ribbon patterns. It is set with ornaments of amber; diameter, $4\frac{3}{16}$ inches. On the reverse are runes, which have been variously read. Dr. Wilson says, 'what is decipherable reads in good Scottish Celtic into what he explains to mean—Malbritha, his friend, in recompense to Maolfridi.'—*Prehistoric Annals*. One of the most famous articles of the kind existing in Scotland is the *Brooch of Lorn*, in the possession of Macdougall of Dunolly, near Oban. It is believed to be identical with one torn



Brooch of Lorn.

from the breast of Robert Bruce by Alexander of Lorn, the ancestor of Macdougall, in a personal contest with the king. This interesting article is of silver, about 4 inches in diameter, with a circle of jewelled obelisks. •

BROOD, v. *bród* [AS. *brod*, a brood: Dut. *broeden*, to sit on eggs: W. *brwd*, hot (see BREED)]: to sit over, as a bird over her eggs: to spread over as with wings: to dwell on a subject in anxious thought [Gael. *bruad*, a dream]; to cherish: N. offspring; progeny; the number of birds hatched at a time. **BROOD'ING**, imp.: **ADJ.** sitting over, as a hatching hen; spreading over, as wings; continuing in gloomy or anxious thoughts over. **BROOD'ED**, pp. **BROOD-MARE**, a mare kept for breeding.

BROOK, n. *brúk* [AS. *broca*, a brook: W. *bruchen*, the bubbling or springing up of water: Gael. *bruich*, to simmer: Dut. *broek*, a marsh]: a small stream of water; a streamlet. **BROOK'LET**, n. *-lēt*, a small brook. **BROOKY**, a. *brúk'ī*, abounding in brooks. **BROOK-LIME** (*Veronica Becabunga*), species of Speedwell (q.v.) abundant in ditches, water-courses, and wet places near springs in most parts of

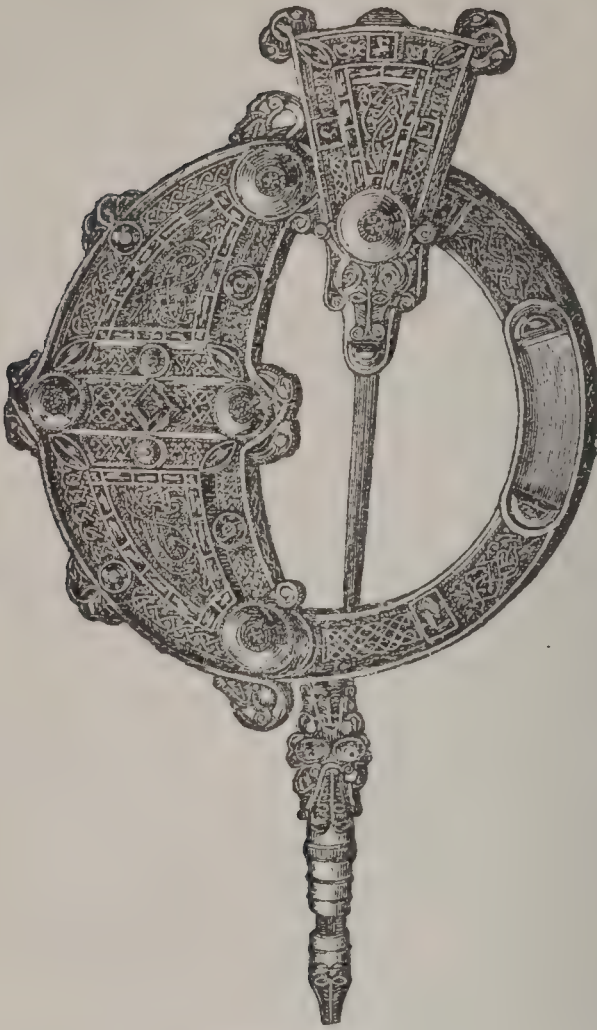
Europe and in the United States. It is perennial, with procumbent stems, rooting at the base; the leaves on short stalks, elliptical, obtuse, and slightly serrate, both stems and leaves smooth and very succulent; the small blue flowers, in form resembling those of the other speedwells, in racemes, the stalks of which arise from the axils of the opposite leaves. The leaves and young shoots have a bland or a slightly bitter taste, and are a tolerable ingredient in spring salads. They are sometimes sold with water-cresses.—See CRESS, WATER.—In Scotland, the plant is called *Water Purpie*.

BROOK, v. *brúk* [AS. *brucan*, to use, to enjoy: Icel. *bruka*, to use: Goth. *brukjan*; Ger. *brauchen*, to use]: to bear; to endure; to put up with. BROOK'ING, imp. BROOKED, pp. *brúkt*.

BROOKE, *brúk*, HENRY: 1708–83; b. in the house of Rantavan, county Cavan, Ireland: dramatist and novelist. His father was a wealthy clergyman. Young B. was first sent to school to one Felix Somerford, where he showed talent for rhyming. This received development while he resided at Dr. Sheridan's school in Dublin. In 1724, he went to study law in London, and became the friend of Pope and Lyttleton. From this brilliant literary society he was recalled to Ireland by a dying aunt, who left him guardian of her child, a girl of 12 years. B. put the child to a Dublin boarding-school, and married her secretly two years thereafter. Four or five years subsequently, when his wife had borne him three children, he removed to London, and renewed his literary associations. In London, he published a poem, entitled *Universal Beauty*, which Pope admired, and of which he perhaps turned a couplet here and there. Shortly afterward, B. returned to Ireland; but in 1736 he was again in London, and was introduced to the Prince of Wales, who cultivated his friendship, and made him presents. About this time, he published his play, entitled *Gustavus Vasa*, full of noble sentiments and inconceivable characters. In 1740, B. was taken ill, and returned to his native country, where he published several books, and a tragedy *The Earl of Westmoreland*, which was performed in Dublin. In his later years he removed to Dublin, and died there. The sonorous eloquence of his plays has not saved them from oblivion; and his novel, entitled *The Fool of Quality*, is his only work likely to meet the eyes of modern readers. It was originally published in five vols., and was greatly admired by John Wesley. A new edition was published 1859, with a preface by the Rev. Charles Kingsley.

BROOKE, SIR JAMES, Rajah of Sarawak, and Governor of Labuan: 1803, Apr. 29—1868; b. Coombe Grove, near Bath. B. was naturally imbued with the spirit of the adventurers of the Elizabethan time. He early entered the East India army, was seriously wounded in the Burmese war, and returning home on furlough, spent some time in travel on the continent. Shipwrecked on the voyage out to join his regiment, he was unable to reach India before his fur-

lough had expired; his appointments consequently lapsed, and he quitted the service. He now conceived the idea of putting down piracy in the Eastern archipelago, and of carrying civilization to the savages inhabiting these islands. He purchased a yacht, which he manned with about 20 sailors, and after a three years' cruise in the Mediterranean, to test the sea-worthiness of his vessel and the seamanship of his crew, sailed from London for Sarawak, a province on the n.w. coast of Borneo, 1838, Oct. When he arrived there, Muda Hassim, the uncle of the sultan of Borneo, was engaged in a war with some rebel tribes. B. lent his assistance, and in return had the title of Rajah and Governor of Sarawak conferred upon him, the native governor being forced to resign. B. immediately set about reforming the government, instituted free trade, and framed a new code of laws. The murderous custom of head-hunting, prevalent among the Dyaks, he declared to be a crime punishable with death, and vigorously set about the extirpation of piracy. This was done so draconically as to occasion great dissatisfaction in this country; and the result was that parliament abolished the 'head-money' that had been previously paid for the slaughter of pirates. Certain charges, however, brought against B. in the house of commons, in connection with this matter, were declared by a royal commission to be unsubstantiated. The head-money was received, not by B. and his associates, but by the British ships-of-war that had co-operated with him. On his return to England, B. received a warm welcome, was created a Knight Commander of the Bath in the year following; and the island of Labuan, near Sarawak, having been purchased by the British govt., he was appointed gov. and commander-in-chief, with a salary of £2,000 a year. In 1857, B., who had been superseded in the governorship of Labuan, but who still acted as rajah of Sarawak for the sultan of Borneo, was attacked at night in his house by a large body of Chinese, who were irritated at his efforts to prevent opium smuggling, and only escaped with his life by swimming across a creek. The Chinese committed great havoc on his property, but their triumph was short-lived. B. collected some natives, attacked the Chinese, defeated them in several successive fights, and ultimately forced them into the jungle, where they must have perished of starvation. Upward of 2,000 Chinese were killed, and all their flourishing settlements destroyed. Returning to England soon after this, B. lectured in several of the chief towns on the advantages likely to result to that country from a possession of Sarawak, and urged the desirableness of the British government taking it under its protection, as otherwise it was likely to fall into the hands of the Dutch. To enforce this view, an influential deputation waited upon the Earl of Derby (then head of the govt.) 1858, Nov., but he declined to entertain it. B. returned to Borneo 1861, but visited England again twice before his death, on the second occasion having the satisfaction of seeing the independence of Sarawak recognized by the English government. The town prospered greatly under his régime; he found it a



The Tara Brooch.



Brooch of Ugadale.

place of some 1,000 inhabitants, he left it a town, of 25,000; and the exports to Singapore, which, 1840, amounted to £25,000, were in 1858, £300,000. B.'s biography appeared 1877.

BROOKES, JOSHUA: 1761–1833: English surgeon and anatomist. He became so widely known and celebrated through his profound knowledge of the science of surgery and anatomy that it is said the number of his pupils reached 7,000. Besides the publishing of numerous books, of which his *Treatise on Osteology* was probably the most important, he founded an anatomical museum of great value.

BROOK-FARM ASSOCIATION OF EDUCATION AND AGRICULTURE: a community which originated 1841, with William Henry Channing, George Ripley, and Sophia, his wife, with whom were united from time to time George William Curtis, Nathaniel Hawthorne, Theodore Parker, Charles Anderson Dana, John Sullivan Dwight, Margaret Fuller, and other personages of a philosophic turn of mind. It started as an expression of the transcendentalism then attracting philosophical minds in the region of Boston, and as a suggestion from the Fourier communistic movement in Europe, and much shaped by the religious differences which excited New England 1825–45. The dominating idea of the Brook Farm experiment was liberty: it was a practical protest against the long-dominant Calvinism. An organization was formed, having those named and others as stockholders, and a farm of abt. 200 acres was purchased in West Roxbury, 8 m. from Boston, where the transcendentalists who adopted its main principle, carried it into practice by working the land to the best of their ability and knowledge, which, however, were limited. The actual life of Brook Farm was, reverentially, planned on the theory that Christ had designed to re-organize society, and that any effort in that direction would be worthy and acceptable to Him. The intellectual plan of the undertaking covered such intellectual objects as would be expected from the brilliant minds included in the community. In this regard it was doubtless successful—so long as it existed. That it ceased to exist, after five or six years, was due to the utterly unpractical natures of those engaged in the enterprise, which was finally abandoned after having been a financial failure from the beginning. The scheme of the association contemplated utilizing the labor—physical and intellectual—of each of its members, at a certain fixed rate, the intention being to dispose of the results of such labor to the outside public, and with such profit that all the delights and adornments of life were to be procurable therefrom, which were to be held in common by the members of the association. This part of the plan failed; and the community, having definitely gone over to Fourierism about 1843, and to Swedenborgianism a year later, engaged in a general proselytizing undertaking, a search both for converts and capital, prosecuted by lecturers and writers. But the whole undertaking was brought to a collapse, by the destruction of the 'Phalanstery' at Brook Farm, by fire, on the night of 1846, March 3.

BROOKFIELD—BROOKLINE.

BROOKFIELD: a town (1788) of Fairfield co., Conn., in the town of Brookfield on the Housatonic railroad, and near the Housatonic river, which bounds the township on the n. e. It has cutlery and hat factories and several churches. Pop. (1880) 1,193; (1900) 1,046.

BROOKFIELD: town of Worcester co., Mass., on the Boston and Albany railroad. The Chicopee river divides the town, which contains 5 churches, factories for the manufacture of carriages and shoes, a savings bank, and a high school. Pop. (1890) 3,352; (1900) 3,062.

BROOKFIELD: city of Linn co., Mo., on the Yellow creek. It is entered by the Hannibal and St. Joseph and the Burlington and Southwestern railroads, which have here a roundhouse and machine shops. The mining of coal is an important industry. The town has a costly school edifice, 5 churches, and 2 hotels. Pop. (1900) 5,484.

BROOKHAVEN: a town in Lincoln co., Miss., on the New Orleans, St. Louis and Chicago railroad. It is the county-seat, and has 4 churches, several newspapers, and a college for women. Extensive pine forests surround it. Pop. (1890) 2,142; (1900) 2,678.

BROOKHAVEN: large township in Suffolk co., N. Y., comprising the villages of Patchogue, Setauket, and Port Jefferson. The Long Island railroad intersects it. It covers the entire breadth of Long Island at that point, and is therefore bounded on the n. by Long Island Sound, and on the s. by the Atlantic Ocean. In most parts its soil is productive. Pop. (1890) 12,772; (1900) 14,592.

BROOK'ITE: mineral: pure native titanite anhydride; found in the Ozark mountains w. of the Missouri river (known as Arkansite); also in Perthshire, Scot.

BROOKLINE: town in Norfolk co., Mass., on the Charles river, which separates it from Cambridge and from Boston, with which latter it is connected by a street railway. B. is the terminus of a branch of the Boston and Albany railroad, and has a station on the Narragansett div. of the N. Y. and New England railroad. It is a favorite place of residence for business men of Boston, to which city a part of B. was annexed 1870. It has numerous handsome villas and country seats, a fine granite town-house, which cost \$150,000, a good public library in a building costing \$50,000, and some remarkably fine churches. B. is the location of the B. reservoir, with a capacity of 120,000,000 gals., and about one mile from that, on the boundaries of Brookline, Brighton, and Newton, is the great Chestnut Hill reservoir, with a capacity of 800,000 gals. From Boston to and around this point is a favorite drive. Indeed, the town presents many beautiful drives. There is a weekly paper. Pop. (1900) 19,935.

BROOKLYN.

BROOKLYN: a borough of the city of New York since 1898, Jan. 1; prior thereto the cap. of Kings co., N. Y.; at the w. end of L. I., on N. Y. Bay and the East river, an arm of the sea which separates B. from N. Y. and is the w. connection of L. I. Sound with the Atlantic. It includes the former city of B., W'mburg, Gravesend, Flatbush, Flat Lands, New Lots, New Utrecht, and several smaller towns annexed to B. before the consolidation with N. Y. It now occupies the whole of Kings co., and extends from the Atlantic at Coney Is. to the E. R. and N. Y. harbor; area 66.39 sq.m. Most of the borough is above tidewater. The s. part is low and level, but the s.e. is occupied by a broad range of low hills. Along the East river, s. of Fulton st., is an irregular bluff 70 ft. above the sea, known as Brooklyn Heights. This is thickly built upon, and affords a magnificent view of the city and bay of New York. Many of the streets are exceedingly attractive, lined with beautiful residences which are surrounded by extensive ornamental grounds. The principal business thoroughfare is Fulton st. or ave., extending about 5 m., from Fulton Ferry to East New York. Broadway, Myrtle ave., and Atlantic ave. also are leading business streets. A r.r. tunnel from the foot of Atlantic ave. to New York is projected, for largely increasing the facilities of freight and passenger transport.

Although, from its beautiful situation, B. formerly served in some measure as a suburb of residences to N. Y., and many of its inhabitants carried on business there, its own commercial and industrial activity were great. It had over 25 m. of dockage and \$160,000,000 of private capital invested in docks and warehouses; besides a large amt. expended by the nat. gov. in its navy yard, and by the city and state in docks and piers. In the warehouses were annually stored foreign goods in bond worth \$150,000,000; grain, flour, provisions, sugar, molasses, cotton, petroleum, glucose, etc., for export and home consumption, worth more than \$200,000,000; and coal, lumber, bricks, building material, and ship-stores, worth \$50,000,000 are stored in sheds and wharves in the upper part of the shore line. The grain trade is enormous, the warehouses being capable of holding 12,000,000 bushels; and the boats engaged in this trade are valued at \$20,000,000. The grain and provision trade with Europe employs 7 lines of steamers and a large number of transient vessels. Most of the river front is lined with basins, wharves, and docks, of which the most important are the Atlantic dock, the Erie basin, the Brooklyn basin, and the U. S. navy-yard, which is the principal naval station in the country. The naval grounds comprise 144 acres, and the yard proper comprises 45 acres. About 2,000 men are constantly employed here. Among the interesting things in the yard is the immense dry dock, one of the most remarkable structures of the kind in the world. The material is granite, and the main chamber is 286 ft. long by 35 ft. wide at the bottom, and 307 ft. long by 98 ft. wide at the top, with a depth of 36 ft. The enormous steam pumps connected with the docks can empty it

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of water in $4\frac{1}{2}$ hours. The dock cost more than \$2,000,000. Just e. of the navy-yard are extensive marine barracks, and on the opposite side of Wallabout Bay is the marine hospital, a handsome structure surrounded by 21 acres of ground, and having accommodations for 500 patients. The Atlantic dock fronts Governor's Island, near the s. extremity of the shore line. This massive dock was built by a stock company. The basin is parallelogram in form, has an area of 40 acres and a depth of 25 ft. It will accommodate the largest vessels; 500 vessels can occupy it at one time, and 400 canal boats, besides many other vessels, have floated upon it at once. The pier line on Buttermilk Channel is 300 ft. long, and the total wharfage is about 2 m. Surrounding the basin on all sides, excepting an entrance 200 ft. wide for vessels, are substantial brick and granite warehouses from 2 to 5 stories high, covering 20 acres. Railway lines are now running, and steam-ferries in progress, by which grain, provisions, sugar, petroleum, and other imports will be brought from all points to these warehouses without breaking bulk, for shipment and distribution.

B. has great manufacturing interests, the chief being probably that of sugar and molasses. In 1900 B. had 10,713 manufactories, engaging \$271,375,301 capital; average number of hands employed 100,881; wages paid during year \$51,107,604; value of products \$342,127,124. Leading industries, and amounts invested in each, are as follows: Sugar and molasses refining, \$58,084,443; foundry and machine-shop products, \$26,446,178, and malt liquors, \$15,739,923.

The net debt was (1903) \$64,599,734; assessed valuation of all taxable property, \$756,110,610; tax rate, \$2.35 per each \$100 of assessed valuation.

The courts which have jurisdiction for trial of jury cases in B., are supreme court of state of N. Y.; borough court of Brooklyn; county court of Kings co.; court of sessions; police court; surrogate's court; U. S. circuit and district courts. The jurisdiction of borough court is concurrent with that of supreme court of state, provided the property in suit is within the borough, or cause of action arises within borough, or plaintiff or defendant is resident in borough, or summons is personally served on defendant within the borough. There is a large city jail and a county penitentiary.

Among local institutions is a well conducted hospital on Raymond st. The insane hospital, the almshouse, the county hospital, and the truant's home are at Flatbush. Also, there is an inebriate's home at Bay Ridge. There are many charitable institutions sustained mainly from private funds. Among these are six hospitals and a maternity hospital, six homes for aged and infirm persons, two nurseries, five orphan asylums, seven dispensaries, a home for incurable patients, and an asylum for feeble-minded children.

The public schools are not surpassed in successful management. The teaching force numbers 3,572. Grammar school principals are paid \$3,000; intermediate \$2,200; primary \$1,500; and heads of depts. \$1,000 to \$1,250.

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Primary teachers' pay is \$300 the first year for girls' classes, and \$325 for boys, increasing \$50 per annum for five years, the maximum being \$575. Grammar teachers are required to have three years' experience. Their pay begins at \$500 for girls' classes, and \$550 for boys, increasing \$100 in two years, in grades four, five, and six; and \$175 in grade three. The four higher grades pay \$800, \$850, \$900, and \$950 for girls' classes, and \$50 more for boys, except in the highest grade, and there the maximum salary of \$1,200 is reached in the 12th year. The total average attendance (1902) in all the public schools was 167,978; value of school property \$11,882,583; total expenditures for the schools during the year \$5,141,249. *Per cap.* cost of maintaining the day schools was about \$21. Besides the public schools, there are several incorporated insts. of nat. reputation, among which are the Pratt Inst., the Packer Inst., the Polytechnic Inst., and the Adelphi Acad.; also a training school for teachers, manual high school, separate high schools for boys and girls, etc. The boro has 3 large libraries and several smaller ones, containing over 200,000 vols. The largest of these—the Brooklyn Library—contains 150,000 vols. In addition to the libraries, several museums of antiquities, of natural history, and of mechanical art, and an academy of design, as well as two art associations, are well sustained. Of newspapers there are four dailies, five weeklies, two monthlies, and several of irregular issue.

The record credits B. with more than 450 churches. All Christian denominations are represented, but the leading churches are Rom. Cath., Meth. Epis., Baptist, Presb., Prot. Epis., Congl., and Reformed. St. Ann's on the Heights is a fine Prot. Epis. church, in middle-pointed Gothic architecture. The church of the Holy Trinity, Prot. Epis., of brown stone, with a spire 275 ft. high, is one of the handsomest Gothic churches in the country. St. Paul's, Prot. Epis., is of blue granite and sandstone, rough-hewn. The architecture is Gothic; it has a front of 75 ft., a depth of 145 ft., and is 67 ft. high in the nave. The Church of the Pilgrims, Congl. (pastor, Richard S. Storrs, D.D.) is of gray stone, in Norman style, and inserted in the main tower is a piece of the rock upon which the Pilgrims landed, 1620. Plymouth Church, Congl. (for many years Henry Ward Beecher's), is a plain structure built of brick, with sittings for 2,800 persons, and having one of the largest organs in the United States. The Rom. Cath. Cathedral is not finished, but when completed it will vie with the imposing cathedral on Fifth Avenue in New York. The B. Tabernacle, of which T. DeWitt Talmage, D.D., was at one time pastor, built on amphitheatrical lines, was opened 1870, and destroyed by fire 1872, Dec. A new edifice was erected and dedicated 1874, Feb. 22, and was burnt down 1889, Jan. 26. A third and larger building was raised on its ruins and opened 1891, Apr. 25, but met the same fate, being gutted by fire 1894, May. No new tabernacle has been erected.

The principal secular buildings of B. are not remarkable

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for architecture. The city hall is of white marble, in the Ionic style; dimensions 162 by 102 ft., and 75 ft. in height. It is surmounted by a tower, which rises 153 ft. from the ground. The county court house is 140 ft. wide and extends 315 ft. back; it is 64 ft. high and is surmounted by a cupola rising 104 ft. above the street. The style of architecture is Corinthian, and the material is Westchester marble. The Academy of Music is on Montague st., near the city hall; built 1860, at a cost of \$200,000. Near it is the building of the art associations; and opposite is the well-built and elegant Brooklyn Library building. Among the notable buildings are the Long Island Historical Society building, the Pratt and Packer Institute buildings, and the new Brooklyn Orphan Asylum.

B. has several noted parks and cemeteries. Prospect Park is of irregular shape, having an area of 522 acres, beside a large parade ground adjoining. It has two fine boulevards 200 ft. wide, one extending to the sea, six m. away; the other, to East New York. This park is laid out and improved upon a plan of beauty and convenience which compares with any in the country; its forest trees, landscapes, vistas, lakes and drives, are all much admired. Of the smaller parks Washington, or Fort Greene, is the most noted. Here lie the remains of 11,500 persons, who died in English prison-ships during the revolutionary war. The place has been surrounded by an elegant and substantial wall, and the ground has been laid out in convenient walks shaded with appropriate shrubbery. Near Washington Park and in the s. part of the city is Greenwood cemetery; upon a high ridge and overlooking New York Bay, New York, and Brooklyn, with views of New Jersey, Staten Island, and the Atlantic Ocean. This place, for natural beauty of location and the magnificence and wealth of its sculpture, is widely known. It contains 474 acres. The Evergreens cemetery contains 360 acres.

More than 100 railroads run into or traverse B.; of these 77 are propelled by electricity and about 20 by steam. Two elevated railroads and a network of trolley-cars traverse the streets and connect the suburbs with the city, also making its numerous ferries, nearly 20, easy of access. Others are projected. Formerly a steam-dummy road ran from Greenpoint to Fort Hamilton. Four steam roads now connect the city with Coney Island. But the most important public work of recent years is the East River Bridge. This crowning monument of engineering skill was begun 1867, and formally opened in the spring of 1883. It belongs to the suspension class of bridges, and connects the city with New York. The length of the entire structure is 5,989 ft., and that of the span is 1,595½ ft. The chief engineer of this mechanical wonder was the renowned John A. Roebling. Dying 1869, he was succeeded by his son Washington A. Roebling, to whom is due the honor of bringing the work to completion. See BRIDGE.

The Brooklyn water-works cost the city \$11,379,500. They convey pure water from running streams and ponds on the s. side of the island. Four powerful engines pump

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the supply into a great reservoir by a carefully built conduit. There are in the city seven gas-light companies, two electric light companies, three safe-deposit companies, one trust company, 15 savings banks, and 12 banks of discount, 10 of which are national.

In the emergencies of war, B. has never been found wanting. In the revolution it bore the brunt of the first strategic conflict; and in the war of 1812 its patriotic citizens flocked to Fort Greene, to aid in rebuilding that fortification and in following out the line of earthworks across the island. In the late civil war this city was not outdone by any other in raising troops and sending material aid. The energy, enterprise, and intelligence of the people, at the present time, are well attested by facts already given, but others in abundance are not lacking. The municipal government is a model. A new charter was granted by the state legislature 1873, and has since then been amended in several important particulars. Of all the great cities in the world none surpass B. in public order, and in the purity of its public morals. Corruption has sometimes been charged, but it has existed to a limited extent only. The police force consists of 707 patrolmen. The mayor has the exclusive right to appoint heads of departments, and he alone is responsible for the proper exercise of the executive power. Twenty-five aldermen compose the common council.

The settlement of B., or as it was formerly called Breuckelen ('marshy land'), dates from 1636, when some Walloon colonists took up their residence on the spot that still bears the name of Wallabout (Waalbogt, or Walloons' Bay). The first land bought of the Indians by these people is that at Gowanus, between 27th st. and the New Utrecht line, and 325 acres at the Wallabout bay. The Indian tribe in possession at that time was the Mareckawicks, some of whom were living in the vicinity so late as 1680. Dutch and English settlers soon followed the first occupation; and in 1667 a charter was granted to the town by Gov. Nicolls. The first ferry was established by license 25 years before this (1642), running from Peck slip to a point near the present Fulton ferry. At the time the ferry was licensed there were five hamlets—Breuckelen, the Ferry, Gowanus, Bedford, and Wallabout. In 1698, B. was the most important of these hamlets, but its population numbered only 509, of whom 65 were slaves. In 1776 was fought the battle of Long Island where Greenwood Cemetery, Prospect Park, and Washington Park now are. The size of the place at the close of last century may be inferred from the fact that when the canvasser of 1796, for the New York and Brooklyn directory, passed up the 'Old Road' (Fulton st.), and down 'New Ferry' (Main st.), and through the intervening streets, he got only 125 names. In 1816 the hamlet became an incorporated village, and in 1834 it was chartered as a city. Under the Greater New York consolidation act B. became, 1898, Jan. 1, a borough of the enlarged city. Pop. (1850) 96,838; (1860) 266,661; (1870) 396,099; (1880) 566,689; (1888) 755,000; (1890) 806,342; (1900) 1,166,582.

BROOKS.

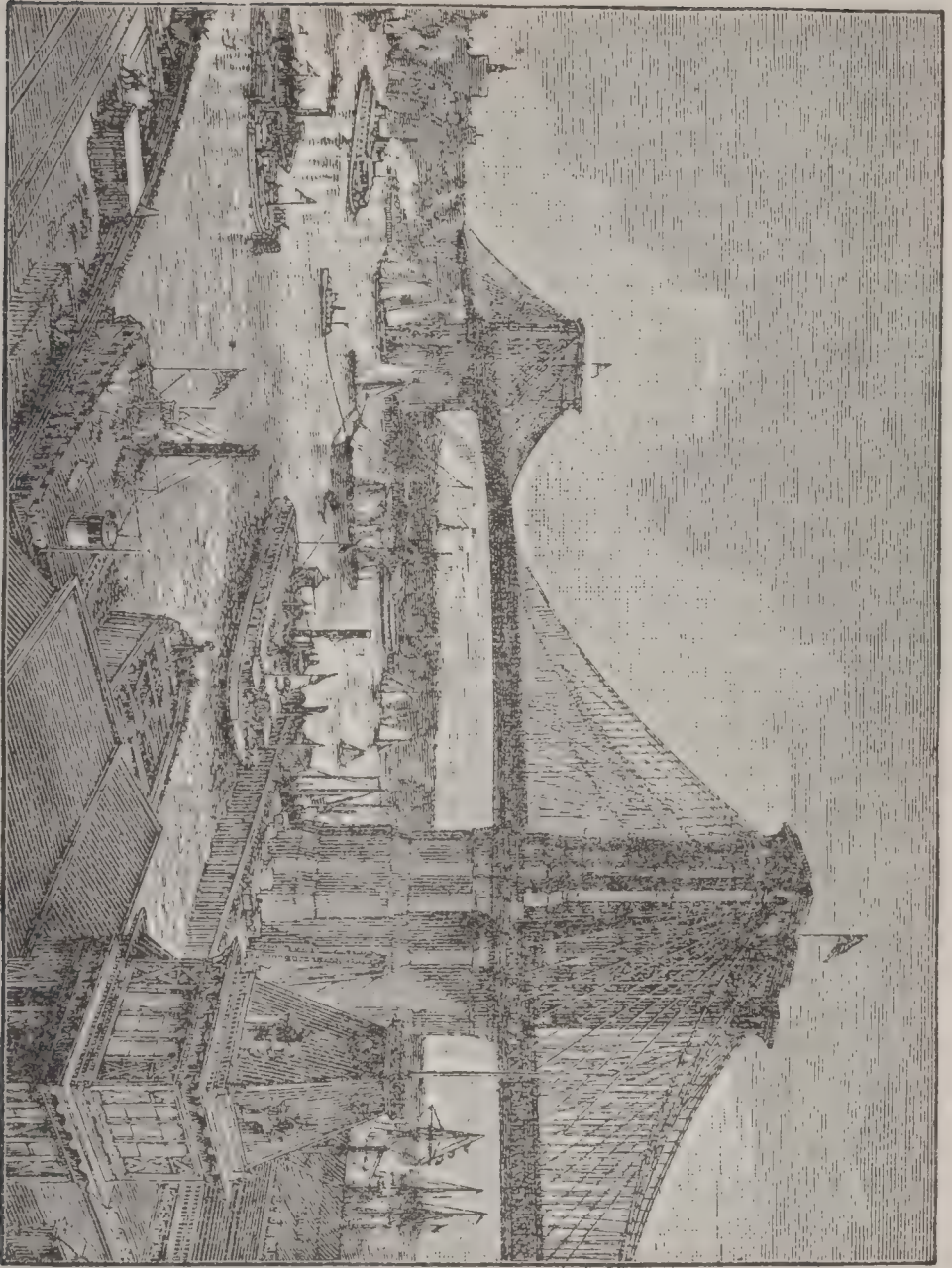
BROOKS, brúks, CHARLES SHIRLEY. novelist and journalist 1815-74; b. Brill, Oxfordshire, Eng., son of William B., architect. He was educated chiefly by the Rev. T. J. Bennett, canon of St. Paul's; and leaving school, was articulated to an attorney. He passed with distinction the examination in the Law Society's Hall; but soon adopted literature as a profession, in London. He wrote dramas—*Our New Governess, Honors and Tricks, The Creole, The Daughter of the Stars*; and he contributed to some leading periodicals and journals. He became writer of the Parliamentary Summary for the *Morning Chronicle*, for which journal he went to Russia, Syria, and Egypt, to report on the condition of labor and the poor in those countries. B. was a contributor to *Punch* from its beginning. The 'Essence of Parliament' in *Punch* is said to have been his regular contribution. He also wrote for it 'Miss Violet and her Offers,' 'The Naggletons,' etc. B. contributed political and other articles to the columns of the *Illustrated London News*. His novels are *Aspen Court, The Gordian Knot, The Silver Cord* (originally published in *Once a Week*), and *Sooner or Later*. B. was the author of *The Russians of the South*. He gained repute as a lecturer. On the death of Mr. Mark Lemon, 1870, B. became the editor of *Punch*. A volume of his *Wit and Humor* appeared 1875.

BROOKS, brúks, CHARLES TIMOTHY: 1813-83; b. Mass.; graduated at Harvard, 1832; became Unitarian minister at Newport, R. I., 1837. He made numerous translations from different German authors; among them are: Schiller's *William Tell* (1838); *Homage of the Arts* (1847); *German Lyrics* (1853); and Goethe's *Faust* (1856). He is also author of *Aquidneck* (1848); *The Controversy touching the Old Stone Mill* (1851); *Songs of Field and Flood* (1854); a collection of sermons, etc.

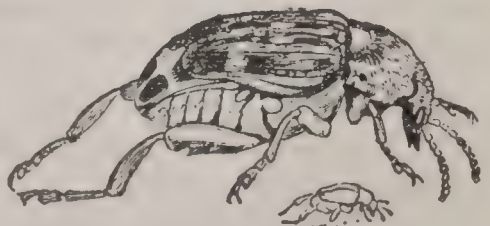
BROOKS, ERASTUS: 1815-86; b. Portland, Me.: journalist. While a youth, he learned the printer's trade and started a newspaper called *The Yankee*, at Wiscasset, Me., being his own compositor, press-boy, and carrier. At the same time he prepared himself for college and taught school. He attended Brown University a short time, but withdrew to become editor of the *Haverhill Gazette*, a newspaper which soon afterward became the property of the poet Whittier. In 1836 B. was Washington correspondent for several papers, and the same year was associated with his brother James in the *New York Express*. Here he remained as assistant and as editor-in-chief till about 1877. In 1856 he was the defeated candidate of the American party for gov. of N. Y.; and a member of the New York senate 1853, and again 1855. B. subsequently joined the democratic party. In 1867 he was a delegate to the state constitutional convention; and in 1871 he became a member of the constitutional commission. In 1878, 1879, and 1881 he was a member of the assembly and the leading democratic member of the committee of ways and means. He died at Staten Island.

BROOKS, JAMES: 1810-73; b. Portland, Me.: journalist.

Brooklyn Suspension Bridge.



Brush Turkey (*Talegalla Lathamii*).



Bruchus Pisi (natural size and magnified).

BROOKS.

When 11 years of age he was a clerk in a store, but soon after returned to school at the suggestion of his employer, who had discovered his eagerness for learning. After graduating at Waterville, he studied law at Portland for a time. In 1832 he went to Washington as correspondent of the *Portland Advertiser*, and thus introduced the fashion of regular Washington correspondence. After that he travelled in Georgia, and wrote interesting letters from the Creek, Cherokee, and Choctaw country. As a member of the Maine legislature, 1835, he offered the first proposition for a railroad from Portland to Montreal and Quebec. When the legislature adjourned, B. went to Europe to travel on foot, writing back descriptive letters. On his return, 1836, he established the *New York Express*, which soon became one of the leading newspapers of the country. In 1847 he was a member of the New York state legislature, and in 1849 was elected to congress. In 1850 he favored the Clay compromise measures; in 1854 he entered the American party, and in 1861 the democratic party by which he was soon afterward sent to congress, where he remained three terms. In 1873 the house censured Mr. B. for the use of his position of government director of the Union Pacific railroad and a member of this house to procure the assignment to himself or family of stock in the Credit Mobilier. The mortification thus caused hastened his death, at Washington, D. C.

One of the elements of Mr. B.'s success as a journalist, was his remarkable faculty for keen observation. This is especially noticeable in his Washington and Georgia letters and in his *Seven Months' Run Up and Down and Around the World*, an account of his travels in 1872.

BROOKS, MARIA GOWEN: 1795–1845: b. Medford, Mass., d. Matanzas: poetess, called *Maria del Occidente* by Southey. Having lost her father while young, she was cared for and educated by Mr. Brooks, her future husband. After his death 1823, she moved to Cuba; visited London and Paris 1830; and Southey at Keswick 1831. She published: *Judith, Esther, and other Poems* (1820); *Zophiel, or the Bride of Seven* (1825), her best work, for which she received of Southey the highest praise; *Idomen, or the Vale of Yumuri*; *Ode to the Departed*; etc.

BROOKS, PHILLIPS, D.D.: 1835, Dec. 13—1893, Jan. 23: b. Boston: Episc. bp. Mass. He graduated at Harvard 1855, and at the Prot. Episc. Theol. Seminary of Va. 1859; was rector of the Church of the Advent (1859–62) and the Church of the Holy Trinity (1862–69), both in Philadelphia; has been rector of Trinity Church, Boston, since 1869; and received his degree from Harvard 1877 and Oxford 1885. In 1881 he was tendered the Plummer professorship of Christian morals and preaching in Harvard, and 1886 was elected asst. bp. of Penn.; but declined both offices. He was a brilliant pulpit orator, entertained 'low-church' views, and had published *Lectures on Preaching* (1877); *Sermons* (1878); *The Influence of Jesus* (1879); *Baptism and Confirmation* (1880); *Candle of the Lord and Other Sermons* (1881); and *Sermons Preached in English Churches* (1883). He was elected bp. of Mass. 1891.

BROOM.

BROOM, n. *bróm* [AS. *brom*: Dut. *brem* (see **BRAMBLE**)]: a wild shrub producing yellow flowers and pods; the *Cytisus*, or *Sārōtham'nus scopāriūs*, ord. *Legūmīnōsæ*, sub-ord. *Papīlīonācēæ*; a besom or brush with a long handle, made originally of the broom bush. **BROOMY**, a. *bróm'ī*, full of broom. **BROOM-STICK**, *-stīk*, the staff or handle of a broom. **BROOM-RAPE**, common name for the *Oroban'chē*, a genus of curious parasitical plants, ord. *Orobanchācēæ*.

BROOM: name of a number of species of shrubs of the closely allied genera *Cytisus*, *Genista*, and *Spartium*; nat. ord. *Legumīnosæ*, sub-order *Papīlionaceæ*—all of them having long slender branches, along which are produced axillary flowers. The genera differ in the form of the standard (see **PAPILIONACEÆ**), which is roundish in *Spartium*, broadly ovate in *Cytisus*, and oblongo-ovate in *Genista*, while *Spartium* has also an acuminate keel, and that of *Cytisus* is very obtuse, that of *Genista* being oblong, and not wholly including the stamens and pistil. The legume is many-



Common Broom.

a, flowering branchlet; *b*, end of branchlet, not flowering, showing leaves with three leaflets; *c*, a pod; *d*, a tube of stamens cut open.

seeded in all, the calyx 2-lipped, and the filaments united in a tube.—**COMMON B.** (*Cytisus scoparius*, the trivial name being from the Lat. *scopæ*, long twigs, or a besom)—which

BROOM.

has by different botanists been ranked in each of the genera just named, although it possesses the characters above assigned to *Cytisus*, but has recently been made the type of a new genus, under the name of *Sarothamnus scoparius*, or *communis*—well-known native of Britain and of the continent of Europe, growing in dry soils, and ornamenting hedge-banks, hills, and bushy places, in May and June, with its large yellow flowers, which are on short stalks, drooping, solitary, but produced in considerable number along the straight slender branchlets. The whole aspect of the plant is graceful. The lower leaves have three oblong leaflets, the upper ones, or bracts, are simple; the branches are angular and of a very dark green, very tough, and much in use for making besoms. They have also been used for tanning and dying; and their fibre has been woven into a coarse strong cloth, and even made into paper. The whole plant is very bitter, with a peculiar nauseous taste and smell when bruised. The young tops and seeds are used in medicine, being powerfully diuretic, and very beneficial in some kinds of dropsy. They are also mildly laxative, and in large doses emetic. They are administered usually in the form of a decoction. B. inhabits colder climates than furze, reaching to a greater elevation on mountains, and being found beyond the n. limit of furze. It varies in size from a very humble shrub to one of 20 or even 30 ft. in height, and when it reaches this size, the wood is of great value for the finer purposes of cabinet-makers and turners.

—IRISH B. (*Cytisus* or *Sarothamnus patens*), not unfrequent as an ornamental plant in British shrubberies, is a native, not of Ireland, but of Spain and Portugal.—PORTUGAL B., or WHITE B. (*Cytisus albus*), native of the countries bordering on the Mediterranean, is often planted in Britain as an ornamental shrub, and is much admired for the beauty of its fascicled white flowers, produced upon long filiform branches. Its leaves have three leaflets. It sometimes attains a height of 15 or 20 ft.—SPANISH B. (*Spartium junceum*) is a native of the s. of Europe, growing generally in dry soils and rocky places, and attaining a height of 8 ft. or upward. Its branches are upright, round, and rush-like, a characteristic of this genus. They are smooth, and bear only a few small simple leaves, which soon drop off. The fibre of the branchlets is much used in some parts of Italy, France, and Spain for making cloth, ropes, etc. In the s. of France, the plant is cultivated on dry unproductive soils. The branchlets are made into bundles, dried, beaten, steeped, and washed, in order to the separation of the fibre. It possesses medical properties similar to those of the common broom.—A white-flowered species (*S. monospermum*), grows abundantly on the loose sands of the coasts of Spain, and produces a similar fibre. It is mentioned by Barth as growing in great abundance in Africa s. of the Great Desert. There are many other species somewhat resembling these: some are cultivated in greenhouses. The Canary Isles produce some remarkable for the fragrance of their flowers. The name B. is not given to those species of *Cytisus* (q.v.) and *Genista* (q.v.) which do not display in a marked degree

BROOM-CORN—BROSE.

the character of having long slender twigs.—**BUTHER'S B.** (q.v.) is a plant of an entirely different family.

BROOM-CORN: a grass cultivated in the United States for the manufacture of brooms and whisks, which are made of the tops of the culms and the branches of the panicle. It is regarded as a mere variety of the same species (*Sorghum saccharatum*), of which the shaloo, or sugar-grass (see **SUGAR-CANE** and **DURRA**), is another variety. It has been much longer cultivated in N. America, however, than the sugar-yielding variety. Its introduction is ascribed to Dr. Benjamin Franklin, who, seeing an imported whisk in the possession of a lady of Philadelphia, found a single seed on it, and planted it. It is said to have been brought from the East Indies. It is now extensively cultivated in all parts of the country, and much capital is invested in the manufacture of brooms. The crop of B. has a beautiful appearance when near maturity. It often attains a height of 10–12 ft., sometimes 15 ft. The stalks are long and hard, and used mostly for manure, though cattle will feed on them before they are touched by frost, and cattle are very fond of the leaves. The seed is used like Indian corn, for feeding poultry, and sometimes for feeding cattle and horses. The usual practice in harvesting B. is to bend the stalks $2\frac{1}{2}$ –3 ft. from the ground, and leave them a few days to dry, then to cut them over 6–8 inches below the panicle, laying the tops in heaps, to be conveyed to the scraper, which is often wrought by horse-power, and which removes the seed from them. Improved machinery has recently been employed in the manufacture of brooms and whisks from B., and they are produced with great rapidity. It is supposed that, in 1860, about 10,000 acres of B. were cultivated in New York state, 9,000 in Illinois, 6,000 in Ohio, and about an equal amount in all the other states of the Union, or 30,000 acres in all; the value of the produce about \$1,590,000. Great numbers of brooms and whisks of this material are exported to Britain. See **BRUSHES** and **BROOMS**.

BROOME, *bróm*, **WILLIAM**: 1689–1745: English poet and divine, who assisted Pope in translating the *Odyssey*. For translating eight books from the Greek and preparing all the notes, he received only £500 sterling and a hundred copies of the book. B. complained bitterly; and Pope, feeling sensitive about the exposure to the public took revenge by abusing B. in the *Dunciad*. Dr. Johnson bestowed great praise on Broome's abilities as a translator. He was a rector in Suffolk, England; and published a *Miscellany of Poems*.

BROOM'RAPE: see **OROBANCHEÆ**.

BRO'RA BEDS: series of strata at Brora, village in Sutherlandshire, of the same age as the inferior oolite of Yorkshire. They are remarkable chiefly for the occurrence in them of a seam of coal of good quality $3\frac{1}{2}$ ft. thick, the thickest stratum of true coal hitherto discovered in any secondary strata in Britain,

BROSE, n. *brōz* [a softened form of *broth*: Low Ger. *broi*, boiling water: OE. *browys* and *brewis*. pottage]: a

BROSSES—BROTH.

Scotch dish, made by pouring boiling broth, or a boiling liquid over dry oatmeal or peasemeal, and then stirring it up. *Note*.—Skeat gives a Gael. *brothas*, as the origin of 'brose'; and connects the OE. n. plu. *brewis*, brose or pottage, with the OF. plu. *broues*—from *brou*—from mid L. *brodum*, gravy, broth.

BROSSES, *brös*, CHARLES DE: 1709, Feb. 8—1777, May 7; b. Dijon, France: historian. His first work was *Lettres sur l'Etat de la Ville d'Herculaneum*, the result of a tour through Italy, 1739. At the suggestion of his friend Buffon the naturalist, he wrote the *Histoire des Navigations aux Terres Australes* (1756), in which he described the supposed great southern continent under the several names Magellania, Australia, and Polynesia. The last two of these names, now commonly used, were employed first by Brosse. His next work was *Du Culte des Dieux Fétiches*, etc. (1760). It was followed by a *Traité de la Formation Mécanique des Langues* (1765), which, in spite of many errors, contains not a few novel and ingenious observations and conjectures. During the greater part of his life, B. was occupied in endeavoring to supply the *lacunes* in the works of Sallust; and having collected about 700 fragments by this historian, he published, with such interpolations as he deemed necessary, the *Histoire de la République Romaine dans le cours du Septième Siècle, par Salluste* (1777). At his death he was president of the parliament of Burgundy. His letters from Italy, *Italie il y a cent Ans*, were edited and republished by his son René, Count de Brosse, 1834.

BROTH, n. *bröth* [Icel. *broth*; It. *brodo*; F. *brouet*, broth—from OF. *brou*—from mid. L. *brodum*, the gravy or extract of flesh: Dut. *broeye*; Ger. *brühe*, boiling water: Gael. *bruich*, to boil]: infusion or decoction of vegetable and animal substances in water. It is customary to use more or less meat, frequently beef or mutton, with bone, and certain vegetables, as cabbage, greens, turnips, carrots, peas, beans, onions, etc. The whole are mixed together in cold water, heat slowly applied, and the materials allowed to simmer for some hours. The meat yields up certain ingredients, while others are retained in the residual flesh. The following table will illustrate this:

Ox-flesh heated with water

<p style="text-align: center;">Yields to the Water.</p> <p>Albuminous matter. Gelatine. Creatine. Extractive matters or Osmazome. Lactic acid. Salts. Fat. Saccharine matter.</p>	<p style="text-align: center;">Leaves in the Boiled Meat.</p> <p>Fibrine. Coagulated albumen. Gelatinous tissue. Fat. Nervous matter.</p>
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The vegetables yield albuminous constituents, coloring and mucilaginous matter, and volatile oils and salts.

The real nutritive material present in broth is less than is generally thought, though it aids in satisfying the appetite.

BROTHEL—BROTHERHOODS.

To invands, however, the form of broth known as *beef-tea* (q.v.) is of great importance, as it affords the weak and sickly stomach a light palatable article of diet at a time when stronger food would do the weakened system much harm. See BROSE: NUTRITION.

BROTHEL, n. *bróth'él* [It. *bordello*, a brothel: Sp. *borda*, a hut or cottage: OF. *bordel*, a hut, dim. of *borde*, a little cottage]: a house of ill fame.

BROTHER, n. *brúth'ér* [Dut. *broeder*; Iccl. *brothir*; Goth. *brothar*, a brother; Sks. *bhratr*—from *bhri*, to support: Gael. *brathair*; W. *brawd*; L. *frater*, a brother]: son of the same parents; one that resembles another in appearance or manners; a relation or kinsman; one engaged in the same employment, common purpose, or combination, as a brother officer—i.e., one in the same regiment; one belonging to the same order or fraternity, as a monk or freemason. **BROTHERS**, plu. **BRETHREN**, plu. *brèth'rèn*, members of the same society or profession. **BROTHERLESS**, a. **BROTHERLIKE**, a. **BROTHERHOOD**, n. an association; a fraternity. **BROTHERLY**, a -*lly*, becoming a brother; kind and affectionate: AD. after the manner of a brother. **BROTHERLINESS**, n. **BROTHER-GERMAN**, *jér'man*, or **-GERMANE**, n. *jér-mān'* [L. *germanus*, of the same stock]: a full brother. **BROTHER-UTERINE**, n. -*ū'tèr-în* [L. *utérus*, the womb]: a brother by the same mother only. **BROTHER-IN-LAW**, n., **BROTHERS-IN-LAW**, plu. a sister's husband; the brother of a husband or wife.

BROTHERHOODS, RELIGIOUS: societies instituted for pious and benevolent purposes. They were very numerous in the middle ages. Their origin is probably traceable to the desire which then prevailed to imitate the spiritual orders. They were at first founded usually without ecclesiastical authorization, on account of which several of the confraternities that either did not seek or did not obtain the recognition of the church, assumed the character of sects, and were suspected of heresy. To this class, among others, belonged the Beghards and Beguines (q.v.), the Brothers and Sisters of the Free Spirit (see below), the Apostolic Brethren (q.v.), the Flagellants (q.v.), who, tolerated by the church for a while, at last incurred its displeasure, and were severely persecuted. Among religious B. may be reckoned also the old building corporations from which sprang the order of Freemasons, the religious character of whose secret societies indicated, in the opinion of the church, a peculiarly dangerous gnosis and symbolism. Others coming into existence under ecclesiastical oversight, or at least confirmed by the church, had no *arcana*, but were simply dedicated to the promotion of religion, either by the imposition of new penances, the acceptance of new and severer devotions, or the assisting of strangers, travelers, the unprotected, the oppressed, the destitute, and the sick. Admiration and approval cannot be refused to such self-denying fraternities in view of the deficiency of the early communities in charitable institutions. The B. were

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most numerous in Italy, Rome alone having more than a hundred.

BROTHERS AND SISTERS OF THE FREE SPIRIT, a sect which sprang up in the Rhine country during the 13th c., and afterward spread into France and Italy. It grounded its peculiarities on the biblical doctrine, that the Holy Spirit is a spirit of 'freedom.' Misunderstanding the true nature of spiritual freedom, the members of this sect conceived themselves released not only from the rules of the church, but also from the obligations of morality. They set aside the marriage-tie, and indulged in licentiousness. A few even maintained that the deeds of the body could not possibly affect the soul. Intellectually, they are said to have been Pantheistic. The synods of Cologne, 1306, and of Treves, 1310, decreed their suppression, and in the persecutions which ensued, they appear to have been completely dispersed.

THE BRETHREN OF SOCIAL LIFE, BRETHREN OF THE COMMON LOT, OR BRETHREN OF GOOD WILL (also called **HIERONYMITES** and **GREGORIANS**, from Hieronymus and Gregory the Great, whom they claimed as patrons): a fraternity founded about 1376 by Geert Groote (1340-84; b. Deventer), and Florentius Radewin (1350-1400; b. Leerdam, s. Holland). This society—which professed to be a copy of the earliest Christian communities, and was in several respects a forerunner of the subsequent societies of United Brethren, now sometimes styled Moravians—was composed of persons who sought after pious and spiritual exercises without any conventional distinctions of order, etc. Community of goods, ascetic habits, industry, care of the education of young persons, and the use of the vernacular language in divine service, were some of the chief points insisted on by the brethren, who were not fettered by monastic or other vows. Perfect community of goods was a rule of their societies. Despite the persecutions which they suffered from the mendicant friars, they were recognized and sanctioned by several popes and by the Council of Constance. They became most numerous in the Netherlands and n. Germany, but spread also in Italy, Sicily, and Portugal, so that, 1430, they reckoned more than 130 societies. The last was founded at Cambray, 1505. Several brotherhoods of Gregorians assisted in the Reformation. In other cases, their institutions fell into the hands of the Jesuits. Though the founders of these societies were opposed to all learning and science which was not purely moral and practical, their followers rendered most important services to popular education, having free schools in connection with many of their houses, supporting students at other schools, and distributing useful books. They have, indeed, been correctly described as pioneers of the Reformation. After the revival of learning in Italy, the Brethren of Social Life entered into the spiritual activity of the time. The most important and distinguished members of the society were Gerhard Zerbold of Zütphen, Thomas-à-Kempis, and the learned Cardinal Nicholas Cusa.—Societies of women, of similar character, sprang up at the same time with

BROTHERS AND SISTERS OF CHARITY.

those of the Brethren of Social Life. At the head of each was a superior or directress, styled the *Martha*.

BROTHER JONATHAN: term for a typical American; a familiar personification of the United States people; probably derived from Gov. Jonathan Trumbull (q.v.) of Connecticut.

BROTHERS: group of six or eight rocky islets immediately outside the Strait of Bab-el-Mandeb, varying in height from 250 to 350 ft. They lie off the African coast about 9 m. s. of the island Perim, now occupied by England. Of the loftiest point, the lat. and long. respectively are 12° 28' n., and 43° 22' e.

BROTHERS is also the name given to three isolated mountains near the coast of New South Wales, between Harrington Inlet to the s., and Port Macquarie to the n., or between lat. 32° and 31½° s. They are valuable as landmarks.

BROTHERS, ENGLISH LAW OF DESCENT AMONG: anciently in the law of England, a provision for immediate descent without reference to the parent as the *commune vinculum*; but changed by the 3 and 4 Will. IV. c. 106, s. 5, which enacted that no brother or sister shall be considered to inherit immediately from his or her brother or sister, but every such descent shall be traced through the parent: see **INHERITANCE**.

BROTHERS, LAY: inferior class of monks, not in holy orders, but bound by monastic rules, and employed as servants in monasteries (q.v.).

BROTHERS, RICHARD: 1789–1824, Jan. 25: a fanatic; at one time a lieut. in the British navy, which he quitted 1789. Refusing, from conscientious scruples, to take the requisite oath to enable him to receive his half-pay, he was reduced to great distress, and ultimately placed in the work-house. Dating his first call from 1790, he announced himself, 1793, the apostle of a new religion, 'the Nephew of the Almighty, and Prince of the Hebrews, appointed to lead them to the land of Canaan.' In 1794, he published *A Revealed Knowledge of the Prophecies and Times*, etc.; and, 1795, *Exposition of the Trinity*. He was author of several other wild and fanatical publications. Many of the ignorant, and even some men of education and good standing, were deluded by his fantasies, sold their goods, and prepared to accompany him to his New Jerusalem, which was to be built on both sides of the river Jordan, where he was to arrive in 1795. As a dangerous lunatic he was at one time committed to Bedlam.

BROTHERS AND SISTERS OF CHARITY: two widely ramified beneficent societies in the Rom. Cath. Church, for the nursing of the poor and sick in hospitals, without distinction of faith, rank, or nation. The order of the Brothers of Charity, or Compassionate Brothers, was established 1540, at Seville in Spain, by the Portuguese John di Dio (d. 1550), who had served in Africa under Charles V. The funds for the purpose were obtained by begging. The primitive object of the society was the care of the sick, and

BROTHERS AND SISTERS OF CHARITY.

the reformation of women of immoral character: it was composed of lay-members, under no rule. In the year 1572, the order received the papal recognition and was subjected to the rule of St. Augustine. All the privileges of the mendicant orders were conceded to it 1624, and it was then divided into a Spanish congregation, with a major-general in Granada, and an Italian or extra-Spanish congregation, with a major-general in Rome. To the latter belong also the Brothers of Charity in Switzerland, Germany (where Austria is their chief seat), Poland, the Netherlands, France, and other countries. The European members of the order clothe themselves in black; the extra-European, who are under a separate general of their order in America, wear brown. Their services to distressed humanity continue to be held in high estimation. The Sisters of Charity, formerly also, on account of their dress, called *Gray Sisters*—independent associations of unmarried Christian women, for the alleviation of human suffering, especially for the tending of the sick and the poor—were called into existence in France, 1634, by Vincent de Paul (b. 1576), greatly assisted by the noble-hearted and self-devoted widow, Le Gras (by birth De Marillac). The society was recognized 1655 by Clement IX., and in 1685 numbered 224 convents. The French revolution sorely interrupted the abundant and benevolent labors of the Sisters of Charity by the suppression and proscription of their convents in France, but Napoleon restored the order 1807 by the convocation of a general chapter of the scattered sisters, under the presidency of the empress mother, and by the grant of the necessary funds; and there are at present more than 300 associations in France, where, in the villages, elementary education is in great part conducted by them. They attend the sick in all the great hospitals. There is in Germany a Rom. Cath. assoc. of unmarried women not bound by conventual rules, and possessing the right of withdrawing at pleasure, but placed under a strict supervision, and occupied in the same duties as the Sisters of Charity. The Institute of Deaconesses (q.v.) in the Protestant churches of the continent of Europe is of a similar character.

BROUGHAM.

BROUGHAM, n. *brō'ām* [after Lord *Brougham*]: a light four-wheeled close carriage.

BROUGHAM, *brō'ām* or *brō'm*, **HENRY**, Lord **BROUGHAM AND VAUX**: 1778, Sep. 19—1868, May 7; b. Edinburgh. His father, Henry B. was the descendant of an ancient family in Westmoreland, and his mother, Eleonora Syme, a woman of much talent, was a niece of Robertson the historian. B. received his education at the High School, and afterward at the Univ. of Edinburgh. He gave early promise of ability, some mathematical papers written by him at the age of 18 having been considered worthy of publication in the *Transactions of the Royal Soc.* He spent some time in travelling on the continent, and in 1800 was admitted to the Scotch bar. In company with Jeffrey, Horner, and Sydney Smith, B.'s first public efforts were in the service of the *Edinburgh Review*, and he contributed to it some of its most powerful articles. His liberal political views excluded him from the hope of promotion in Scotland, and a character which he had acquired for eccentricity and indiscretion, excluded him from all legal practice, except the unremunerative practice of the criminal courts. After seven years of vain attendance in the courts of Edinburgh, he betook himself to a field more worthy of his ambition, and in 1808 passed at the English bar.

In London, B. first attracted public notice by his admirable appearance at the bar of the house of commons, when he was employed on behalf of certain Liverpool merchants to ask the repeal of the Orders in Council. Soon after this, in 1810, he entered parliament, and within a few months of the time of taking his seat, brought in and carried his first public measure—an act making participation in the slave-trade felony. He was welcomed by the opposition leaders, to whose party he had attached himself, as a most powerful assistant in their attacks upon the government. B. succeeded in carrying the repeal of the obnoxious Orders in Council shortly before the general election of 1812, and then ventured to contest, with another whig, the membership for Liverpool against Canning and another tory. He was defeated, and remained without a seat in parliament till 1816, when he was returned for Winchelsea, and again became an active member of the opposition. By this time he had also established some reputation in the courts of law. He never, indeed, acquired a very large practice, but he repeatedly distinguished himself by speeches of great vigor and ability in the defense of persons prosecuted for libel by the crown. His most famous appearance as an advocate, however, was in defense of Queen Caroline, when, with Denman, he defended the injured queen with unequalled courage and disinterestedness, at the cost, as both well knew, of exclusion, for years to come, from all professional advancement. But his eloquence and boldness, though they forfeited for him the favor of the crown, gained him that of the people, and for the ten years 1820–30, B. was the popular idol. He made no bad use of his power. In 1823, he used it, though in vain, in support of a scheme of

national education; and to his activity is owing, in great measure, the establishment of the London Univ., of the first Mechanics' Institute, and of the Soc. for the Diffusion of Useful Knowledge. In 1830, B. delivered a most powerful speech against slavery, and in consequence of it—as he himself believes—was invited to stand, and returned, as member for the great popular constituency of the county of York. The aristocratically disposed whigs would—had they dared—have excluded B. from the reform ministry; but, in addition to having enormous popularity, he was virtually their leader in debate in the commons, and was thus, in spite of his unmanageableness, indispensable. After various intrigues, B. was offered, and was persuaded, against both his interests and his inclinations, to accept a peerage and the chancellorship. He took his seat in the lords 1830, Nov., and assisted materially in carrying through that house the great measures proposed by the liberal ministers. He shared in the general popularity, which afterward attached to those ministers, and when they were dismissed by William IV. 1834, B. left office, never to return to it. After that time, he held in the upper house a position as nearly analogous as may be to that formerly held by him in the commons, criticising freely the conduct of successive administrations, and steadily forwarding every measure for social progress.

It will be as a law-reformer that B. will be best remembered. He took up Romilly's uncompleted task, of carrying into practice the ameliorations suggested by Bentham. His efforts in this direction began as early as 1816, when he introduced into parliament a bill to remove various defects in the law of libel. In 1827, in a memorable speech which occupied six hours in delivery, B. enumerated the defects in nearly every branch of English law, and made proposals for dealing with law-reform on a proper scale. These, as might have been expected, met small encouragement. It has been the fortune of many of his measures to be carried afterward, in a mutilated form, by other hands. After he left office, B. succeeded in carrying various reforms in the law, among which were extensive changes in the law of evidence. Among the measures proposed by B., but left for future law-reformers to carry, were bills for the codification of the criminal law, for the establishment in England of a system of public prosecutors, and for the giving of compensation to parties acquitted. Lord B.'s acts and bills, as well those regarding the slave-trade, education, and other public questions, as those touching on law-reform, have been collected and published by Sir J. E. Eardley Wilmot (Lond., Longman, 1857). The large well-filled volume which they form is the most fitting monument that could be preserved of the activity, perseverance, and public spirit of the man.

As an orator, more especially as a debater in parliament, B. was, among the men of his time, inferior only to Canning. He was wont, however, to indulge in his speeches in too large an admixture of exciting elements; argument was mingled with fiery declamation; ridicule, sarcasm,

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invective, were freely used; and these he dealt out with a vehemence and energy that at times carried him far beyond bounds. The power of ready, rapid, and forcible diction was eminently his. In many other fields besides oratory, B. won a high reputation. He cultivated mathematical and physical science with success, and ventured upon the domain of metaphysics, and even of theology. His miscellaneous writings are of great extent, and upon an almost incredible variety of subjects. They were, however, intended more to serve purposes of the moment, than as permanent additions to literature; and though they show great powers of rapid comprehension and nervous, clear exposition, it cannot be said that they set forth any new truths in politics or morals, or any original discoveries in science. The honors due to men of letters B. did not fail to acquire, having successively been made lord rector of Glasgow Univ., pres. of Univ. College, London, member of the Institute of France, chancellor of the Univ. of Edinburgh, and lastly, D.C.L. of Oxford.

Lord B. took a warm interest in legal and social reform. While not engaged in parliament, he resided chiefly at Cannes, in the s. of France, where he died. His lordship married, 1819, Mary Anne Eden, granddaughter of a baronet in the county of Durham. The issue of this marriage was two daughters, who died before reaching womanhood. The patent of the title to the peerage was extended to make it descend to the family of his brother. B. left a *Memoir of his Life and Times*, published in three vols. (1871).

BROUGHAM, JOHN, actor: 1810-80; b. Ireland; son of a brilliant amateur painter. He was educated at Dublin Univ., where he became a classical scholar. Quitting the study of surveying on account of poverty, he went to London to enter the East India Service. Having histrionic talent, which had been cultivated at Dublin, and meeting a theatrical friend, he changed his plans, accepted the loan of a guinea, and acted in *Tom and Jerry* at the Prince of Wales' Theatre. His first bit was made as O'Slash in the *Invincibles*, a part which in its name is typical of his individual line of dramatic art. This year, 1830, or the year following, he wrote his first play, a burlesque prepared for William E. Burton, then acting in London. In 1831 he went with Mrs. Vestris to the Olympic Theatre, and appeared in the cast of *Olympic Revels*, in the first full bill that she issued there. In 1840 he was director of the Lyceum, for which theatre he wrote a number of plays. He came to New York 1842, and appeared in the Old Park Theatre. Soon afterward he joined the Burton company in Chambers street, where he made many brilliant hits both as actor and as manager. Here he also wrote a number of plays, among which were *Vanity Fair*, *All is Fair in Love*, *Dombey and Son*, and the *Irish Emigrant*. Afterward he managed Niblo's Garden; in 1850, Dec., he opened Broome's Lyceum, on Broadway; then was a member of Wallack's company till 1856; and afterward managed the Bowery Theatre, reviving *King John* with splendid scen-

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ery. Meanwhile he was writing more plays, among which were the *Game of Love*, *Bleak House*, *A Decided Case*, *Game of Life*, *Playing with Fire*, *Pocahontas*, *Love and Murder*, *Romance and Reality*, etc. In 1860 he returned to England, where he remained five years, playing, writing and adapting plays, among them *The Duke's Motto*. He acted at the Princess' in his own comedy of *Playing with Fire*. Brougham reappeared in the United States 1865, and soon after his return joined Wallack's company, with which he remained until his death. Among his later plays are *John Garth* and *The Lily of France*.

Mr. B. was twice married, first to Emma Williams, a beauty of the Juno type, who obtained a divorce; then to Annette Nelson, a singing actress, and at one time manager of the Richmond Hill Theatre.

BROUGHT, *v. braw't*: pt. pp. of BRING, which see.

BROUGHTON, JOHN CAM HOBBHOUSE, Lord: 1776-1869: English statesman. He was educated at Cambridge, where he was intimate with the poet Byron, with whom, later, he made a tour of s. Europe. As a radical in politics he, 1816, wrote a book on the *Hundred Days in Paris*. The work gave much offense both in England and on the continent, and so bitter was the feeling in Paris that the printer and translator there was sentenced to fine and imprisonment for 'atrocious libel.' The author himself was imprisoned in Newgate nearly three months. Two years later, however, he was elected to parliament as a martyr to toryism. For the next twelve years he was an ardent advocate of the liberal measures which have made that time famous, such as the repeal of the Test and Corporation Acts, and the Rom. Cath. Emancipation Act. In 1831 he was sec. of war in the Gray ministry, and the same year became a baronet. He was subsequently commissioner of woods and forests, and pres. of the board of control. On becoming a peer, 1851, he ceased to participate in public affairs.

BROUGHTY-FERRY, *braw't-fēr'ri*: town of Forfarshire, Scot., on the Firth of Tay, 4 m. e. of Dundee. It is connected with Ferry-Port-on-Craig, in Fifeshire, by a railway-ferry over the firth, here a mile broad, which before the opening of the Tay bridge, formed the chief connection between Edinburgh and Fife with Dundee. It has cod and other white fisheries. Many Dundee merchants occupy fine villas at B.-F. On the shore stands an ancient castle, lately repaired as a defense for the Tay. Pop. of B. (1881) 7,923; (1891) 7,644.

BROUSSA, *brō'sā*, or BOUR'SA: ancient *Prusa*, where the kings of Bithynia usually resided; lat. 27° n., long. 40° e.; at the foot of Mount Olympus, in Asia Minor. Prusa is said to have been built by Prusias, King of Bithynia, who waged war with Cræsus or Cyrus. Seifeddulat, of the race of Hamadan, took it in 336 of the Hegira, but it was retaken by the Greek emperor, A.D. 947. In 1356, Orcan, son of Othman, second emperor of Turkey, captured it, and made it the cap. of his empire, and it contin-

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ued so until the taking of Constantinople by Mohammed II., 1453.

B. is most pleasantly situated, facing a beautiful and luxuriant plain, covered for many miles with plantations of mulberry-trees. The city and suburbs are about six m. in circumference. The town is divided from the e. suburb by a deep channel or vale, over which there are several bridges, one of them—with shops on each side—being 90 paces long and 16 broad. The streets are remarkably clean, and the bazaars very good, being supplied with European goods from Constantinople. It contains a great number of mosques, some of which are fine buildings. The silks of B. are much esteemed in the European markets, and great quantities are exported every year to France, Constantinople, and Smyrna. The inhabitants manufacture a kind of silk, like satin, mostly striped, used for the undergarment of the oriental dress; also a material from silk and flax, used chiefly for shirts; and a sort of gauze, called 'brunjuke' much worn by the Turkish ladies for under-garments. A great quantity of British manufactrued goods, such as Manchester 'twists,' 'gray calicoes,' 'prints,' 'zebras,' etc., are imported into B., the goods being landed at Constantinople, and thence conveyed overland to Broussa. It is the official residence of a Turkish pasha, and the seat of a Turkish tribunal. B. is subject to frequent earthquakes. In ancient times, it was famous for its thermal baths, or 'royal waters,' as they were called, which still remain. Pop. of B., 35,700 of which abt. 5,000 Armenian.

BROUSSAIS, *bró-sā'*, FRANÇOIS JOSEPH VICTOR: 1772, Dec. 17—1838, Nov. 17; b. St. Malo, France: founder of the 'Physiological School.' In early life, after studying at Dinon, he served for a time first in the navy, then in the army. In 1820, he was appointed first prof. at the military hospital of Val-de-Grace. In 1832, he became prof. of general pathology and therapeutics in the Faculty of Medicine in Paris, and afterward was made a member of the Institute. He died at his country residence at Vitry. In 1841, a statue was erected to his memory in the court of Val-de-Grace. B.'s peculiar views are ably explained in his chief works—the *Histoire des Phlegmasies ou Inflammations Chroniques* (1808), and *Examen de la Doctrine Médicale généralement adoptée* (1816), which assert the following principles: that life is sustained only by excitation; that this excitation may be either too strong (*surexcitation*) or too weak (*adynamie*), the latter case, however, being far less frequent than the former. These abnormal conditions of surexcitation and adynamie at first manifest themselves in a specific organ of the body; but afterward, by sympathy, are extended to other organs; that is, all diseases are originally *local*, and become *general* only by sympathy of the several organs. The organs most subject to disease are the stomach and bowels, and therefore *gastro-enteritis* (inflammation of the stomach and the intestines) is the basis of pathology; consequently, B. resorted to local phlebotomy—especially the application of numerous leeches to the region of the abdomen

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—as a remedy in fevers and various diseases. His theory and practice gained many adherents in France, who took the name of the 'Physiological School.' But a more exact knowledge of physiology has demonstrated that the views of B. were one-sided and exaggerated. Yet they have not been without use in pathology, as they have led to a more careful study of pathological anatomy and physiological sympathies, and to a more exact observation of the so-called specific morbid processes of which the existence was denied by B. and his followers. Montègre, *Notice Historique sur la Vie, les Travaux, et les Opinions de Broussais*.

His son, CASIMIR BROUSSAIS, b. 1803, prof. at Val-de-Grace (1833), was a zealous adherent of the B. system, and is the writer of a work, *Hygiène-Morale*, based on phrenology.

BROUSSONETIA: see MULBERRY.

BROUWER, ADRIAN: see BRAUWER, ADRIAN.

BROW, n. *brow* [AS. *braew*; Russ. *brov*, brow: Dut. *brauwe*, an eyelid, margin: Icel. *bra*, eyelid; *brun*, an eyebrow]: the ridge over the eye; the forehead; the edge or brink of a steep place, as of a river or hill: V. to form an edge or brink to. **EYEBROW**, n. *i'brown*, the hair over the eye. To **KNIT THE BROWS**, to frown; to scowl. **BROW-BEAT**, v. *brow'bēt*, to daunt or depress by haughty and stern looks; to bully into submission by arrogant and impudent language. **BROW-BEATING**, imp.: N. the act of discouraging or depressing by stern and rough language. **BROWBEATEN**, pp. *brow-bēt* n. **BROW-BOUND**, having the head crowned or encircled, as with an ivy wreath.

BROWN, a. *brown* [Ger. *braun*; Icel. *brunn*; F. *brun*; It. *bruno*, perhaps the color of things burnt—from Goth. *brinnan*, to burn]: of a dark or dusky color, inclining to redness: V. to make dusky or dark. **BROWN'ING**, imp. **BROWNE**d, pp. *brownd*. **BROWN'ISH**, a. somewhat brown. **BROWN'NESS**, n. the quality of being brown. **BROWN-COAL**, n. lignite or wood coal of a brown color, being coal imperfectly mineralized and presenting a decidedly woody structure. **BROWN-STUDY**, n. gloomy or dull thoughtfulness or reverie; properly, a species of reverie in which the attention has the consent of the will to give full play to whatever train of ideas may be uppermost. **BROWN'ING**, n. liquid burnt sugar, etc., used for coloring gravy, etc.; the act or operation of giving a brown color to. **BROWNY**, a. *brown'i*, having the color of brown. To **BE DONE BROWN**, to be roasted well; to be deceived or cheated. **BROWN-BESS**, n. *-bēs* [Low Ger. *büsse*, a blunderbuss: Dut. *bus*, a gun-barrel]: the familiar name for the old flint-lock muskets, which had their barrels browned to keep them from rusting. **BROWN BREAD**, bread of a dark color, as opposed to white bread; bread baked of flour containing the whole produce of the wheat.

BROWN, BENJAMIN GRATZ: 1826–85; b. Lexington, Ky.: lawyer and politician. He graduated at Yale, 1847, and settled in St. Louis. In 1854, he began to edit *The Missouri Democrat*, in which he boldly assailed the institution of

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slavery during five years, suffering much personal abuse, and once wounded by a pistol ball. He was a prominent leader among the unionists of Missouri 1861, served in the U. S. senate 1863-67, and in 1871, was elected liberal republican gov. of Missouri. In 1872, he was liberal republican and democratic candidate for vice-pres., Horace Greeley heading the ticket.

BROWN, CHARLES BROCKDEN: 1771, Jan. 17—1810; b. Philadelphia: novelist. He studied for the law, but by the imaginative tendency of his mind he was soon led into literature. The French revolution exercised considerable influence on his thoughts and sentiments. In 1798, he published *Wieland*, the first of his remarkable fictions; and, 1799, *Ormond, or the Secret Witness*. His next production was *Arthur Mervyn, or Memoirs of the Year 1793*—the fatal year of yellow-fever in Philadelphia. In 1801 appeared *Edgar Huntly, or the Adventures of a Sleepwalker*, a romance of wild and picturesque adventure. This was followed in the same year by *Clara Howard*, and in 1804 by *Jane Talbot*, first printed in England. B also composed a number of political pamphlets, contributed to various literary magazines, and founded three or four periodicals. B. shows fine invention of incident and subtle analysis of feeling, but tends to lose hold on reality.

BROWN, Sir GEORGE: 1790-1865; b. Linkwood, near Elgin, Scotland: British general. He entered the army 1806, became lieut. 1807; served in the Peninsular war. At the battle of Talavera he was severely wounded, and at the storming of Badajoz was one of the forlorn-hope. He was appointed major, 1814, May 26; lieut. col., Sep. 29. In 1814, he was in maj. gen. Ross's expedition against the United States, and was wounded at the battle of Bladensburg. From 1824, Feb. 6—1842, he commanded a battalion of the Rifle Brigade. He was made adj.gen. of the forces, 1850, Apr., and lieut.gen., 1851. In the Crimean war, 1854-5, B. commanded the Light Division. At the battle of Inkermann, 1854, Nov, 5, he was severely wounded, and obliged to retire for a short time to Malta. In 1855 he was created a Knight Commander of the Bath. In the expedition to the Sea of Azof, he commanded the British troops; and in the first unsuccessful attack on the Redan of Sebastopol, he had the chief command of the storming-party. He was gazetted 1856, Apr. 3, 'General in the army for distinguished service in the field.' He was a Knight of Hanover, received the Turkish order of the Medjidie of first class, 1855; and the grand cross of the Legion of Honor, 1856. In 1860 he became commander-in-chief in Ireland, and in 1862 a privy-councilor.

BROWN, GOOLD: 1791-1857; b. R. I.; descended from some of the early Quaker settlers of New England. At 19 years of age he taught a district school in his native state; then a Friends' boarding school in Dutchess co., N. Y., 1811. In 1813 he removed to New York where for more than 21 years he conducted an academy. Finding that the grammars in use at that time were inadequate, he set about

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providing better ones. The superiority of B.'s methods soon became apparent, and his books commanded a large sale. His most important work is *A Grammar of English Grammars*. At the time of his death, in Mass., he had just finished a revision of this.

BROWN, HUGH STOWELL: b. 1823 in the Isle of Man; son of a clergyman of the Church of England. At 15 he went to England to learn land surveying and engineering. Resolving afterward to enter the ministry of the established church, he returned to his native island and studied there three years; but deciding at the end of this period that the baptismal doctrines of the established church were at variance with the Scriptures, he became a member of the Baptist denomination, and was appointed minister of Myrtle Street Chapel, Liverpool, where he soon became one of the recognized religious and moral leaders of the country. As a lecturer to the working classes, he was so successful that audiences of from two to three thousand artisans were frequently gathered to hear him on Sunday afternoons. He lectured also in the United States and Canada.

BROWN, JACOB: 1775-1828; b. Bucks co., Penn.; soldier. He became a surveyor, and 1796-98 surveyed public lands in Ohio. Then he settled in N. Y., taught school, studied law, and wrote political articles for the press. Later he bought land in Jefferson co., where he erected the first house in Brownsville, now a prosperous village. He became county judge and col. of militia. His military promotion to the rank of gen. was rapid; and in the war of 1812 he commanded our troops on the Canadian frontier, where he showed skill and courage in the defense of Sackett's Harbor, and in the battles of Chippewa and Niagara. In acknowledgment of his services the city of New York granted him its freedom, and congress gave him a vote of thanks, together with a gold medal, emblematical of his triumphs. In 1821, Mar. 10, he became gen.-in-chief of the U. S. army.

BROWN, JAMES BALDWIN, D.D.: 1820-84; b. Inner Temple, London; eldest son of the Rev. Dr. James Baldwin B. After studying at Univ. College, London, he studied law; but later prepared for the Congl. ministry. In 1843, he began preaching at Derby; in 1846, took charge of Clayhand's Independent Chapel, London; and removed with his congregation to a new church in Brixton Road 1870. He was chairman of the Congl. Union of England and Wales, 1878. Among his many publications are: *The Christian Policy of Life* (1869); and *The Higher Life, etc.* (1874).

BROWN, JOHN, of Haddington: 1772-1787, June 19; b. Carpow, near Abernethy, Perthshire: formerly the most popular, still among the most revered theological writers in Scotland. Deprived of both his parents when only 11 years of age, he became assistant to a venerable and pious shepherd, John Ogilvie, who nursed the boy's religious sentiments. Romantic yet well accredited stories, related by his biographers, illustrate his insatiable thirst for learn-

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ing. While still a friendless 'herd laddie,' with no teacher, he had made great progress in Greek and Latin; so that the country-people round about believed that he was in league with the devil, and had pledged his soul for unhallowed lore. At a later period of his life 'he knew nine or ten languages, classical, oriental, and modern, and had amassed vast stores of Puritan, Scottish, and Dutch divinity.' After a brief career as a pedlar—an employment which Wordsworth's *Excursion* may show was neither mean nor degrading—B. became a volunteer in a regiment of militia raised in Fifeshire during the rebellion of 1745; and in 1747, schoolmaster in the neighborhood of Kinross. During the vacations of his school he studied philosophy and divinity under the inspection of the associate synod, and the superintendence of the Rev. Ebenezer Erskine and James Fisher. In 1750 he was ordained pastor of the secession church at Haddington. Perhaps a more faithful, industrious, and holy minister never labored in Scotland. David Hume was once prevailed upon to go and hear him, and the criticism of the great skeptic was: 'That old man preaches as if Christ were at his elbow.' Although self-educated, he had little of the narrowness which usually accompanies culture so obtained; he corresponded on friendly terms with Episcopalians, and often expressed a warm affection for all true Christians. Although himself a sound Presbyterian Calvinist, 'the love of the Lord' was his real and ultimate test of a man's orthodoxy. In 1758, B. published *Help for the Ignorant*; and in 1765, his famous *Christian Journal*. In 1768, he was appointed prof. of divinity under the associate synod, and in the same year issued his valuable *Dictionary of the Holy Bible*. In 1771, appeared his *History of the Church from the Birth of the Savior*; and 1778, the *Self-interpreting Bible*. This last, B.'s *magnum opus*, has been amazingly popular in Scotland, and has been commended by high dignitaries of the Anglican church. B. also issued a great variety of sermons, tracts, etc.

BROWN, JOHN, D.D.: 1784, July 12—1858, Oct. 13; son of John B., minister of Whitburn, and grandson of John B., of Haddington. He studied at Edinburgh Univ., and at the theological hall of the Secession Church. In 1806 he was ordained to the pastorate of a church in Biggar; a small town in Lanarkshire. In 1822, he was transferred to Rose Street Church, Edinburgh, and 1829 to Broughton Place Church, in the same city. In 1834, he was appointed prof. of pastoral and exegetical theology in connection with the associate synod. Dr. B. was a powerful and exceedingly attractive preacher, and an expositor of Scripture. Among his works are: *The Law of Christ respecting Civil Obedience*; *The Resurrection of Life*; and his scholarly *Expository Discourses on the Epistles of Peter, on the Epistle to the Galatians, and on the Epistle to the Romans*. See Dr. Cairns's Memoir (1860).

BROWN, JOHN, M.D., LL.D.: author of *Rab and his Friends*: 1810, Sep. 22—1882, May 11; b. Biggar, Lanark-

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shire; son of John B., D.D., and great-grandson of John B., of Haddington. He studied medicine at Edinburgh Univ., and in 1832 established himself at Edinburgh as a physician, in which profession he was highly esteemed; but it was as an essayist of rare insight, quaint fancy, humor, and tenderness, that he became well known to all English-speaking people. He contributed to various magazines, and in 1858 issued a first volume of collected essays, to which he gave the name of *Horæ Subsecivæ*. In 1882 the *Horæ* were extended and rearranged in three volumes, of which the first comprises *Locke, Sydenham*, and other papers. *Rab and his Friends*, a powerful but eminently simple tale of a Scottish carrier and his dog Rab, gives name to the second volume. This story, delightfully combining smiles and tears, pathos and humor, soon attained world-wide popularity, and has been frequently reprinted and translated. The third series of the *Horæ* is *John Leach and other Papers*. B. was catholic, kindly, loving and beloved. He was a Fellow of the Royal Soc. of Edinburgh, and had a civil-list pension of £100 allotted to him 1876.

BROWN, JOHN, M.D.: 1735-88; b. in Bunkle parish, Berwickshire, Scotland: son of a day-laborer, and himself first intended for a weaver. He was educated at the grammar-school of Dunse, in which he was subsequently an usher. After studying medicine at the Edinburgh Univ., he became tutor to the children of the celebrated Dr. Cullen, and assistant in his university lectures. Conceiving himself slighted by Cullen, he commenced giving lectures upon a new system of medicine, according to which all diseases are divided into the sthenic, or those depending on an excess of excitement, and the asthenic, those resulting from a deficiency of it; the former to be removed by debilitating medicines, as opium, and the latter by stimulants, such as wine and brandy. His system (known as the Brunonian system) gave rise to much opposition, but his partisans were numerous; for a time his opinions had some influence. In 1779 B. took the degree of M.D. at the Univ. of St. Andrews, and in 1780 published his *Elementa Medicinæ*. He was also author of *Observations on the Old System of Physic*. In 1786, overwhelmed with debt, he removed to London, where he died of apoplexy. His works, with a memoir by his son, Dr. William Cullen B., appeared 1804 (3 vols. 8vo).

BROWN, Captain JOHN: anti-slavery enthusiast: 1800, May 9—1859, Dec. 2; b. Torrington, Conn. Peter B., his paternal ancestor in the sixth generation, was one of the company who came over in the *Mayflower*; Peter's grandson, a captain in the revolutionary army, married a girl of Welsh descent; and his son, Owen B., married a woman of Dutch descent; so that John B. had in his veins blood of three distinct nationalities. Until the age of 20 he assisted his father, a farmer and leather-dresser; he afterward learned the profession of a surveyor. He was twice married, and became the father of 20 children, of whom 12

lived to maturity. As early as 1834, B. was a resident of Randolph, Penn., where he was postmaster. Already he had become imbued with those anti-slavery sentiments which became the leading characteristic of his after life. To his brother he wrote that it was his purpose to make active war upon slavery, his plan being to bring together 'some first-class abolition families' and undertake the education of colored youth; adding that 'if once the Christians of the free states would set to work in earnest teaching the blacks, the people of the slave-holding states would find themselves constitutionally driven to set about the work of emancipation immediately. Through several years it is not possible to follow minutely B.'s career. About 1836 he removed with his family to Ohio; and thence in 1846 to Mass., occupied mostly as a wool-dealer. At this time Gerrit Smith offered to give 100,000 acres of wild land in northern New York, to suitable colored families who would settle there. B. received a small farm in the township of North Elba, whither he removed with his wife and younger children, leaving the elder sons in Ohio. In 1854, the five elder sons went to Kansas, and took up land claims some eight miles from the settlement of Ossawatimie, where they were soon joined by their father.

Quarrels soon broke out between the pro-slavery and the anti-slavery settlers in Kansas. Bloody outrages ensued. An incident in the spring of 1856 shows the spirit of the contest. Five anti-slavery settlers had been deliberately put to death by their opponents. By way of retaliation as many pro-slavery men were called out of their dwellings and one by one shot down by a party of men, prominent among whom were B and his sons. B. was naturally a captain; his activity, boldness, and pertinacity were shown in his remarkable defense of Ossawatimie against greatly superior numbers.

Early in the summer of 1859, B.'s plans for an active war upon slavery had taken definite form. His sympathizers at the east had put him in possession of a considerable supply of arms, and a few hundred dollars in money. Thus provided, he appeared in the neighborhood of Harper's Ferry, Va., where he hired a small, secluded farm. One by one his adherents made their way thither, until there were twenty-two besides himself. On the evening of 1859, Oct. 2, B. gave the word to commence operations by marching on the Ferry. Six of the party were sent to seize some of the neighboring planters, who were to be detained as hostages. B., with the others, moved upon the Ferry. Before midnight the gates of the U. S. Armory had been forced open, the few guards overpowered or over-awed, and the streets of the town were patrolled by B.'s men. An alarm was raised; the people began to arm themselves: and shots were interchanged by which several persons were killed. During the next day Col. Robert E. Lee came up from Washington with a company of U. S. marines. B. and the six survivors of his party took refuge in the engine-house of the armory, where they were picked off one by one, two of the slain being B.'s sons;

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and he was severely wounded and made prisoner. He was brought to trial before a Virginia court. He had every possible advantage of counsel, furnished by his friends in Massachusetts. But nothing could save him. The facts in the case were too patent for denial. He was sentenced to be hung 1859, Dec. 2, at which date the sentence was duly executed. Four of his associates were tried at the same time, and two others not long afterward; all of whom were hung. The life of John Brown has been written by James Redpath, by Richard D. Webb, and more recently by Frank D. Sanborn. This last biography is pronounced by Mr. Thomas W. Higginson to be 'the result of much personal research, and to be a mine of information in regard to one of the most remarkable men of his time.'

BROWN, NICHOLAS: 1769-1841; b. Providence, R. I. merchant, large benefactor of Brown Univ. (q. v.). His father and uncles joined in the enterprise of establishing the institution which bears their name; and gave about \$60,000 toward it. B. gave liberally also for different missionary and charitable objects; and bequeathed \$30,000 toward building an asylum for the insane.

BROWN, ROBERT: 1549-1630; son of Anthony B. of Folthorp, Rutlandshire. He was an English clergyman,, founder of the sect of Brownists. B. was educated at Cambridge, and was at first a preacher at Bennet Church, then a schoolmaster in Southwark, and a lecturer at Islington. In 1580 he began to attack the order and discipline of the established church, and soon formed a distinct church on democratic principles at Norwich. Committed by Dr. Freake, bishop of that see, to the custody of the sheriff, he was released from prison through the influence of the lord-treasurer, Cecil, to whom he was nearly related. Having, 1582, published a controversial work, entitled *The Life and Manners of True Christians*, with, prefixed, *A Treatise of Reformation without Tarrying for Any*, he was again arrested, but, through the lord-treasurer's intercession, again liberated. He afterward formed several independent churches; but, with many of his followers, was driven to take refuge in Holland. In 1589, he returned to England, reconciled himself to the Established Church, and became rector of a church near Oundle, Northamptonshire. Of a very violent temper, he was, when 80 years old, sent to Northampton jail, for an assault on a constable, and died in prison. The Brownists continued, notwithstanding the defection of their leader, to subsist as a separate sect for some time both in Holland (among the English there) and in England. In Holland, they were at last absorbed in, or reconciled to, the Presb. Church in 1701; in England they may be said to have given birth to the Independents (q. v.), later known as Congregationalists (q. v.), who rose into great importance in the 17th c.

BROWN, ROBERT: botanist: 1773, Dec. 21—1858, June 10; b. Montrose, Scotland; son of an Episcopal clergyman. He was educated at Marischal College, Aberdeen; studied medicine at the Univ. of Edinburgh; and became, 1795.

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ensign and assist. surgeon in a Scottish fencible regt., with which he went to Ireland. Applying himself to botany, he resigned his commissions, 1800, and the following year was engaged as naturalist in the expedition for the survey of the Australian coasts. On his return 1805, he brought home nearly 4,000 species of Australian plants, a large proportion new to science. Soon afterward he was appointed librarian to the Linneæan Soc. To the *Transactions* of the Edinburgh Wernerian Soc., and those of the Linneæan Soc., he contributed memoirs on *Asclepiadææ* and *Proteuceæ*, and published *Prodromus Floræ Novæ Hollandiæ et Insulæ Van Diemen's*, vol. i. 1810; a supplement appeared 1830, relating to the *Proteuceæ* only. He also wrote the *General Remarks, Geographical and Systematical, on the Botany of Terra Australis*, attached to the narrative of Captain Flinder's expedition, 1814. His adoption of the natural system of Jussieu, the French botanist, led to its general substitution in place of the Linneæan method. B.'s numerous memoirs in *Transactions* of societies, and other contributions to botanical science, secured for him from Alexander von Humboldt the title *Botanicorum facile Princeps*. In 1810, B. received the charge of the library and splendid collections of Sir Joseph Banks, which in 1827 were transferred to the British Museum, when he was appointed keeper of the botanical dept. In 1811, he was elected F.R.S.; in 1832, was made D.C.L. of Oxford; and 1833 was elected one of the 18 foreign associates of the Acad. of Sciences of the Institute of France. In 1839, the Royal Soc. awarded him their Copely medal for his *Discoveries during a Series of Years on the Subject of Vegetable Impregnation*. He was pres. of the Linneæan Soc., 1849-53. He died in London. A collected edition of B.'s works, 5 vols. 8vo, has been published in Germany.

BROWN, SAMUEL, M.D : 1817, Feb. 23—1856, Sept. 20; son of Samuel B., and grandson of John B., of Haddington. He entered the Univ. of Edinburgh, 1832. He took his degree as M.D. in 1839, and immediately surrendered himself to chemical study. One idea possessed him through life—the possibility of reconstructing the whole science of atomics. He never, in spite of crushing failures in experiment, abandoned his early conviction that chemical elements, usually considered simple, might be transmuted into each other. In 1843, he delivered in Edinburgh four critical lectures on the atomic theory. During the same year he became a candidate for the chair of chemistry in the univ. of that city; but having perilled his claims on the experimental success of his fatal theory, and being again doomed to disappointment, he withdrew his application, and devoted himself with a kind of mournful austerity, and with more than the earnestness of a mediæval alchemist, to the solitary work of his laboratory. In 1850 appeared his *Tragedy of Galileo*, a volume which indicates, but does not embody, the finely imaginative and philosophical genius of its author. His fugitive essays, collected and published after his death, show the qualities

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which drew the admiration of Hamilton, Ferrier, De Quincey, Wilson, Carlyle, Hare, Jeffrey, and Chalmers.

BROWN, SAMUEL R.: 1810-80: b. Conn.: missionary. He graduated at Yale College 1832, and went as missionary to China 1838. He founded at Canton the Morrison Chinese School and presided over it till his return to the United States 1847. This was the first Protestant school in China. In 1859 he went as missionary to Japan and established himself at Yokohama, where likewise he was a pioneer in Christian missions. He translated the Bible into the Japanese language, and published many articles on Japanese and Chinese subjects. He published also, *Colloquial Japanese; Prendergast's Mastery System Applied to English and Japanese*; and translated various Japanese books into English.

BROWN, THOMAS, M.D.: Scottish metaphysician: 1778-1820: b. at the manse of Kirkmabreck, Kirkcudbrightshire; son of the Rev. Samuel B. After being some time at school in England, he went to Edinburgh 1792, and for several years attended the lectures of Playfair, Black, Robison, and Dugald Stewart. He began the study of law, but shortly abandoned it for medicine; and having taken his diploma of M.D. 1803, he became (1806) partner of Dr. Gregory in a large practice. But his strong bent was for literature and philosophical speculation. At the age of 18, he had published a refutation of Darwin's *Zoonomia*; was a member of an Acad. of Physics, or society for 'the investigation of the laws of nature,' formed 1797, including Erskine, Brougham, Leyden, Jeffrey, Smith, and others; and contributed at the outset to the *Edinburgh Review*. In 1804 appeared his essay on *Cause and Effect*, in which he holds that there is nothing in a cause but the fact of immediate and invariable antecedence to the change called its effect. Dugald Stewart, professor of moral philosophy in the univ., being obliged, from bad health, to retire in 1810, secured the appointment of Dr. B., as assistant and successor, which office he held till his death. He was popular as a professor; and his *Lectures*, published after his death, went through a great many editions, though in recent years they have largely fallen out of notice. He also wrote much poetry, now forgotten. Dr. B. attempted to overturn the psychological system of his predecessors Reid and Stewart, and to substitute a new and simplified scheme of mental phenomena. The greater part of this new philosophy was the production of his first session as professor, the writing of each lecture being begun on the evening previous to its delivery. A philosophic system thus improvised could not but be crude and inconsistent, however acute and imaginative its author might be. B.'s chief contribution to psychology is the establishment of a sixth or *muscular sense*.

BROWN, WILLIAM: 1784-1864; b. Ballymena, Ireland: founder of the free public library at Liverpool: educated at Catterick, near Richmond, Yorkshire; in his 16th year accompanied his parents to the United States. Em.

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ployed in the counting-house of his father, in the linen trade in Baltimore, in a few years he was admitted a partner. Returning to England 1809, he established a branch of the business at Liverpool, and laid the foundation of one of the largest mercantile firms in the world. Embarking in the American trade, he became an extensive importer of cotton, and by his energy and integrity, soon became distinguished for the magnitude of his dealings. A liberal reformer, he took a prominent part in local and public affairs, and unceasingly promoted the education of the people. In 1844, he contested South Lancashire upon the anti-corn-law league interest without success, but was returned to parliament for that division of the county 1846, and was three times re-elected. A series of letters in defense of free trade, which, 1850, he contributed to the *Pennsylvanian* (Boston newspaper), attracted much attention. He was also an able advocate for the adoption of a decimal coinage. In 1857, he munificently subscribed £30,000 for the establishment of a free public library at Liverpool.

BROWN COAL: mineral substance of vegetable origin, like common coal, but differing in its more distinctly fibrous or woody formation, which is sometimes so perfect that the original structure of the wood can be discerned by the microscope, while its external form also is frequently preserved. In this state it is often called *Wood coal*; and it sometimes occurs so little mineralized that it may be used for the purposes of wood, as at Vitry, on the banks of the Seine, where the wood-work of a house has been made of it. From this to the most perfectly mineralized state, it occurs in all different stages. It is often brown or brownish-black, more rarely gray. It burns without swelling or running, with a weaker flame than coal; emits in burning a smell like that of peat, and leaves an ash more resembling that of wood than of coal. Wherever it occurs in sufficient abundance it is used for fuel, though very inferior to common coal. *Bovey coal*, so called from Bovey Tracey, in Devonshire, where extensive beds of it occur, and where it has been long wrought, is brown coal, and often exhibits the woody structure. *B. C.* occurs in a number of other places in Britain, and more abundantly near Paris, and in Liguria and Hanover, where it forms thick beds in alluvial deposits.—The *Surturbrand* (q.v.) of Iceland is regarded as a variety of it. *Jet* (q.v.) is also sometimes regarded as a variety of brown coal. Although bearing the name coal, *B. C.* is rather a kind of *lignite* (q.v.) than of coal.

BROWNE, CHARLES FARRAR: 1836–1867, Mar. 6; b. Waterford, Me.: humorist, known as ‘ARTEMUS WARD.’ He graduated from the free village school into a printing-office. As a printer’s boy he worked in many principal towns in New England, until settled at Boston, where he began to write comic stories and essays. A roving disposition led him to the west, and he was engaged as local editor in Toledo, O., and later in Cleveland, where his let-

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ters from 'Artemus Ward, showman,' a pretended exhibitor of wax figures and wild beasts, first attracted general attention. In 1860, he became a contributor to *Vanity Fair*, a New York comic weekly paper, and being invited to lecture soon became very popular. As a lecturer 1863, he visited California, making the overland trip, visiting Salt Lake City, and drawing crowds in every town. In 1864, he opened his illustrated lectures on California and Utah in New York with immense success; and in 1866 was induced to visit England, where he became a contributor to *Punch*, and gave his lecture on the Mormons in the metropolis, at the Egyptian Hall, Piccadilly. But while convulsing crowded audiences with laughter, he was wasting with pulmonary disease. Early in 1867, he went to Guernsey for a milder air, but with no benefit; and was about to embark for America, when he died at Southampton. He was tall, slender, with striking features, and a most amiable character, which attracted and attached to him many friends. By his will, after providing for his mother, leaving legacies to his friends, and his library to the best boy in the school of his native village, he left the bulk of his property in trust to Horace Greeley to provide an asylum for printers. His collected writings, which have had wide circulation in America and England, are *Artemus Ward, His Book*; *Artemus Ward among the Mormons*; *Artemus Ward among the Fenians*; and a posthumous collection and biography entitled *Artemus Ward in England*.

BROWNE, HABLOT KNIGHT (PHIZ): 1815-82: English illustrator and caricaturist. He commenced at school by drawing caricatures upon the benches. After 1839, he illustrated most of the novels of Dickens, Lever, Ainsworth, Mahew, Walter Scott (Abbotsford edition), Byron, etc. He furnished many comical sketches for illustrated publications.

BROWNE, JOHN ROSS: 1817-75; b. Ireland, whence he came to the United States: traveller and author. He was a short-hand reporter in the United States senate. After a voyage in a whale ship, he published *Etchings of a Whaling Cruise, with Notes of a Sojourn on the Island of Zanzibar* (New York, 1846). He went to California 1849, on a mission from the government. On his return from a tour through Italy, Sicily, and Palestine, as newspaper correspondent, he published a humorous work entitled, *Yusef, or the Journey of a Frangi: a Crusade in the East* (1854, illustrated). After another mission to the territories of the northwest and to the Pacific coast, he visited Algeria, Poland, and Russia. He was minister to China 1868-70. His later publications are *Resources of the Pacific Slope* (1869); *The Land of Thor*; and *An American Family in Germany*.

BROWNE, *brown*, Sir THOMAS: 1605-82; b. London: antiquary and physician. His father, a merchant, left him an ample fortune, and he was educated at Winchester and Oxford. He began the study of medicine, then travelled over France and Italy, and after taking the degree of M.D.

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at Leyden, returned and settled (1636) at Norwich, where he practiced as a physician. He was knighted 1671, by Charles II. His chief works are: *Religio Medici* (1642); *Inquiries into Vulgar and Common Errors* (1646); and a *Discourse on Sepulchral Urns* (1648). He wrote also *The Garden of Cyrus, or the Quincunxial Lozenge*; besides a variety of tracts, published after his death. His writings are prized for genial fancy, pleasing quaintness of style, and varied erudition.

BROWN'ELL, HENRY HOWARD: 1820-72; nephew of Bp. Thomas C. B.; b. Providence, R. I.; d. East Hartford, Conn.: author. He graduated at Washington College, Hartford, 1841; studied law, but became a teacher. He served in the U. S. army 1861-63, and in the navy 1863-68. Having turned into verse Farragut's 'General Orders' for the attack of New Orleans, a copy reached the admiral; who opened a correspondence with the author, and in order to gratify his desire of seeing a naval battle, appointed him acting ensign on the flag-ship *Hartford*. *The River Fight*, and *The Bay Fight* are among the finest of his poems. He published also several works on history.

BROWNELL, *brown'el*, THOMAS CHURCH, D.D., LL.D.: 1779-1865; b. Mass.: Bishop of the Prot. Epis. Church and author. In 1804 he graduated at Union College, and remained at the same institution for many years as tutor and prof. He was ordained to the ministry 1816; became asst. minister of Trinity Church, New York 1818, bp. of Connecticut 1819, and presiding bp. of his church in the United States 1852. Among his works which have been favorably received are: *The Family Prayer Book*, and *Religion of the Heart* (5 vols.).

BROWNIAN MOVEMENTS, *brown'i-an*: unexplained motion of inorganic particles in liquids under the microscope, to which some have mistakenly attributed a kind of vitality. These movements may be observed in a dilution of syrup of orgeat.

BROWNIE, or BROWNY, n. [see BROWN]: a domestic spirit of the fairy order in the old popular superstitions of Scotland; named from supposed tawny color. The common tradition respecting the B. is, that he was a good-humored drudging goblin, who attached himself to farm-houses and other dwellings in the country, and occupied himself during night, when the family were in bed, in performing any humble kind of work that required to be attended to, such as churning, thrashing corn, etc.—a spirit never seen or spoken to, and known only by the obliging performance of his voluntary labors—a valuable adjunct to the domestic establishment, unfortunately no longer obtainable by housewives. In Cornwall, a goblin known as *Brownie* is evoked to assist at the swarming of bees (Borlace's *Antiquities of Cornwall*). The resemblance of the Scotch B. to the *Robin Goodfellow* (q.v.) of the English, and the *Kobold* of the Germans, is so conspicuous that the different fragmentary legends on the subject must be referred to one of the old superstitions prevalent in Europe.

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BROWN'ING, ELIZABETH BARRETT: 1809-61; b. near Ledbury, Herefordshire: England's greatest poetess. Her maiden name was *Barrett*. Her youthful culture was far beyond the ordinary education even of 'ladies intellectual.' Classics, philosophy, and science were studied with enthusiasm and success. At a comparatively early period, she became a contributor to periodicals, and a series of articles on the Greek Christian poets indicated both recondite learning and keen poetic insight. Her first important essay in authorship was a translation of the *Prometheus* of Eschylus 1833. In 1838, appeared the *Seraphim and Other Poems*, the external peculiarity of which was its endeavor to embody the ideas and sentiments of a Christian mystery in the artistic *form* of a Greek tragedy. Delicate health, from a rupture of a blood-vessel in the lungs, and the death by drowning of a favorite brother in the following year, compelled her to live in seclusion for a long time. At length her health was restored, and in 1846 she married Robert Browning, the great poet. After their marriage, they resided chiefly in Italy, in whose welfare they were passionately interested. In 1850, Mrs. B. published her collected works, together with several new poems, among which was *Lady Geraldine's Courtship*. In 1851, appeared the *Casa Guidi Windows*, a poem whose theme was the struggle made by the Tuscans for freedom in 1449. *Aurora Leigh*, her longest production, was published 1856. *Poems before Congress* appeared 1860. Her poetry is distinguished by depth of feeling, true pathos, and noble and generous sentiments. Apparently she poured forth her verse with dangerous facility; and there are few of her poems which would not be improved by the simple process of curtailment. But there is not a thought or a sentiment from her pen which any one would wish expunged. Her influence is unfailingly gentle and ennobling. Her son, Robert Barrett B., is an artist.

BROWNING, ROBERT: English poet and dramatist: 1812, May 7—1889, Dec. 12; b. Camberwell near London; son of a clerk in the Bank of England. When 12 years old, he tried in vain to find a publisher for some crude Byronic poems. The influence of Byron soon yielded to that of Shelley and Keats. B. at first went to school at Peckham, and afterward studied under a private tutor. He matriculated at the London Univ., but did not graduate. In 1833 he published anonymously *Pauline*, a poem containing all the faults that later hardened into mannerisms, and in a style strained, turgid, and obscure but also foreshadowing the dramatic force and the vigor of thought that were to come. B. travelled in 1834, lingering in St. Petersburg and Italy, imbibing in Italy that love for and intimate acquaintance with mediæval and monastic history and tone of thought shown impressively in his poems. 1846, Sep. 12, B. married Elizabeth Barrett, the poetess, after a long and romantic courtship, against her father's opposition. They went at once to Italy and settled in the Casa Guidi palace at Florence, where, with occasional visits to Pisa for health, they

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passed a singularly happy life. In 1859 the Brownings kindly assumed the care of Walter Savage Landor, who was then rapidly failing. In 1861 Mrs. B. died, and B. returned to England; but till his death in Venice, he made frequent and prolonged visits to his beloved Italy. In 1867 he received from the Univ. of Oxford the honorary degree A.M., and was elected honorary fellow of Balliol College. The incidents of his life—a life not marred by any so-called eccentricities of genius or domestic infelicities, but passing peacefully on amid the growing admiration of a discriminating audience—are of little interest compared with the story of the course, development, and character of his genius. The following is a list, in chronological order, of his principal productions: *Paracelsus* (1835); *Strafford*, tragedy, produced (1837) at Covent Garden, with Macready in the title rôle; *Pippa Passes*, *Kings Victor and Charles*, *Return of the Druses* (1837–39); *Sordello* (1840); *Blot in the 'Scutcheon*, a play produced (1843) at Drury Lane; *Colombe's Birthday*, produced (1853) at the Haymarket, with Helen Faucit in the leading rôle; *Men and Women* (1855); *Dramatis Personæ* (1864); *The Ring and the Book* (1868–9); *Balaustion's Adventure* (1870); *Prince Hohenstiel-Schwangau* (1871); *Fifine at the Fair* (1872); *Red Cotton Night-cap Country* (1873); *Aristophanes' Apology* (1875); *Pacchiarotto* (1876); *The Agamemnon* (1877); *La Saisiaz* and *The Two Poets of Croisic* (1878); *Dramatic Idyls* (1879); *Dramatic Idyls* second series (1880); *Jocoseria* (1883).

B.'s place is, unquestionably, among the greatest English poets. To this rank he is entitled for his intense dramatic force, the power and value of his thoughts, his gift of subtle psychological analysis, the daring and sustained sweep of his imagination, his virile diction, and his piercing spiritual insight. B. at times reminds us of Shakespeare in the poise and catholic calm of his intellectual attitude, and again at times in the magnificent rush of his passions; but he lacks the crystalline clearness of the earlier poet. The river of Shakespeare's poetry at its deepest depth is clear; the stream of B.'s verse is often turgid with the over-strenuousness of his thought. Shakespeare is a giant with the beauty and grace of Apollo; B. has rather the rugged grandeur of one of Michelangelo's statues. The blind devotees of B. deem his mystic obscurity peculiarly precious as provocative of thought; but it is worth considering whether that which is a virtue in the *prophet* is not alien to the mission of the *poet*. B. was a strenuous worker; we are tempted to say that he was too eagerly absorbed in thinking out the problems that he set for himself to care for mere lucidity. As he has said, 'Success is naught, endeavor's all.' But he could be at once intensely clear and intensely suggestive, as witness that wonderful little poem *The Patriot*. Its dramatic force and piercing pathos are supreme, yet all is suggested, not described, in fewest words of almost homely simplicity. The spiritual grandeur of *The Tyrant* is sublime; the very work-

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ings of the man's mind are laid pitilessly bare. His victim, hunted remorselessly into the last haunt of despair, suddenly 'caught at God's skirts and prayed, . . . and I—I was afraid.' The weird suggestiveness of *Childe Roland to the Dark Tower Came* is awesome. *Bishop Blougram's Apology* takes us inside the very crawling soul of the able and contemptible prelate. Sometimes the poet's subtle analysis, true and powerful as it is, is so long drawn out as to become wearisome, as in *The Ring and the Book*. In making his characters impress themselves upon and explain themselves to the reader, B. is not surpassed by Shakespeare himself: we can give no higher meed of praise to his dramatic instinct than to call attention to the fact that he relies on self-revelation rather than description to produce his most potent effects.

B. had in him a glorious vein of ballad music. *How We Brought the Good News from Ghent to Aix* pulses with the very music of motion; the hoofs beat and the air rushes through every line. B.'s clear-eyed faith in the reality of the spiritual nature of man has been very helpful in a generation which listens, perhaps, with more pleasure to a cultured agnosticism through which the 'larger hope' but faintly breathes. It would be rash to prophesy a continued and wide popularity for B.'s poetry; but it would be hazardous to predict that his audience will in the future be few as well as fit. He stands out in rugged grandeur among the poets of the 19th c., like the Matterhorn among the surrounding Alps. Compared with Tennyson, Browning is as uncouth as was Johnson in comparison with Goldsmith; he has at times a disdain of grace, he clips his words as though stuttering with the rapidity of utterance. But notwithstanding all his faults, he was great. He was a great poet; he was a still greater prophet.

BROWNISTS: sect in the 16th c., maintaining a rude and extreme independency in church polity. The sect was not permanent—soon giving place to the Independents, (q.v.) or Congregationalists, (q.v.), who with the Baptists, (q.v.), maintain the principle of self-government of the local church under Christ, but balanced and adjusted by the cognate principle of the universal fellowship of churches. See **BROWN, ROBERT**.

BROWNLOW, *brown' lō*, WILLIAM GANNAWAY: 1805–77; b. Va.: Methodist minister, journalist, and politician. Left an orphan at eleven years, with no financial resources; he learned the carpenter's trade, and worked on it until he had means to repair the defects of his early education; and then applied himself to study with that feverish passion which he carried into every act of his life. He joined the Methodist Church 1826, and was for 10 years itinerant preacher. In 1828, he favored the election of Pres. Adams; began to edit the *Knorville Whig* 1837; and during the nullification agitation favored the Union. B. was always ardent, fearless, and aggressive. Before the rebel-

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lion, he had favored slavery; but when the crisis came, he proved a firm unionist, and was imprisoned by the Secessionists for several months during the winter of 1861-2. He was gov. of Tennessee 1865-69; then U. S. senator. Was author of a *History of the Commencement, Progress, and End of the Rebellion*, etc. (Phila., 12mo).

BROWN PIGMENTS: in *art*, those substances in which the three primary colors unite in unequal proportions, red being in excess. B. P. are chiefly mineral, and are used sometimes in a raw but usually in a burned state. The most important are bistre, asphaltum, umber, terra di siena, Mars brown, Cassel earth, and brown madder.

BROWNS: on porcelain; generally imparted by a mixture containing sulphate of iron: see POTTERY.

BROWNS on cloth are communicated by arnotto (q.v.) and copperas, assisted by fustic, sumach, peachwood, logwood, and alum: see DYEING.

BROWNSON, *brown'sun*, ORESTES AUGUSTUS, LL.D.: 1803-77; born Stockbridge, Vt. At the age of 19 years he joined the Presb. Church; but (1825) he became a Universalist preacher. Imbibing the ideas of Robert Owen, he entered politics 1828; and was instrumental in establishing a workingmen's party in New York. Influenced by the writings of Dr. Channing, he became a Unitarian preacher 1832. He now applied himself to philosophy and theology, studying the French philosophers. In 1836, he published *New Views of Christianity, Society, and the Church*; and in the same year organized at Boston 'The Society of Christian Progress,' of which he was leader till 1843, though he had stopped preaching before that time. He founded, 1838, the *Boston Quarterly Review*, merged into the New York *Democratic Review* 1843. The romance of his intellectual career was ended in 1844, when he joined the Rom. Cath. Church; to which he thenceforward gave powerful support. In 1840 he published *Charles Ellwood, or the Infidel Converted*, a novel in which he portrays his own religious and philosophic wanderings. He was a voluminous writer; and all his works evince originality, brilliancy, and immense knowledge.

BROWN SPAR: name often given by mineralogists to frequent varieties of dolomite (q.v.), or magnesian limestone, distinguished by a brownish or reddish color, and a pearly lustre, on account of which they are sometimes called also *pearl spar*.

BROWN'S TRACT ('John Brown's Tract'): a portion of the w. slope of the Adirondack region, near the headwaters of the streams that flow into the Black river. It comprises 210,000 acres, and originally formed a part of what is known as Macomb's purchase. It was bought at a foreclosure sale in 1798, for \$33,000, by John Brown, a rich merchant of Providence, R. I., who led the party that destroyed the British schooner *Gaspee*, in Narragansett Bay, 1772. For 20 years he was treasurer of Brown's Univ., which was named in honor of his family, and he laid the corner-stone of its edifice. The tract purchased

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by him was divided into eight townships, and it is said that Aaron Burr had, at one time, some interest in the property, though this was doubtless prior to its purchase by Brown, who died and left it a wilderness.

BROWNSVILLE: town, port of entry, cap. of Cameron co., Tex.: on the Rio Grande, 35 m. from the Gulf of Mexico. It is opposite Matamoras, Mexico, 22 m. from Point Isabel on the Gulf coast. Its prosperity is due chiefly to its trade, of which the steam navigation of the Rio Grande forms the principal part. It has several churches, a convent, a college, a custom-house, and one daily and several weekly newspapers. It is also the seat of a vicar-apostolic of the Rom. Cath. Church. A short distance e. of B. is Fort Brown, garrisoned by U. S. troops. Pop. (1870) 4,905; (1880) 4,938; (1890) 6,134; (1900) 6,305.

BROWN UNIVERSITY; at Providence R. I.; organized at Warren 1764, as the Rhode Island College. In 1770, it was removed to Providene, and in 1804 it received its present name in honor of Nicholas Brown (q.v.), one of its most munificent patrons. It has always been under the direction of the Baptists; but its instruction is not sectarian. The buildings, about half a dozen in number, are on an elevation, surrounded by a beautiful campus of 16 acres adorned with shade trees, mostly elms. The grounds and buildings are valued at \$1,200,000, the productive funds amount to over \$1,874,000, and the annual income is about \$200,000. The college has about 100 scholarship, 64 of which are of \$1,000 each. Thirty scholarships are sustained by a state fund of \$50,000. There is also an aid fund of several thousand dollars, the income of which is used to assist young students of limited means. It has an excellent library, numbering 115,000 bound vols. and a valuable collection of pamphlets. There is also a museum of natural history containing valuable collections. The catalogue of 1902-3 reported 76 professors and instructors, 926 students in all grades, and 5,597 graduates. The first three pres. were Jas. Manning, Rev. Jonathan Maxey, and Rev. Asa Messer. The fourth, 1827-55, was Rev. Francis Wayland, D.D., one of the most eminent of Amer. divines and educators, under whose admin. the inst. was very prosperous. His successors were Barnas Sears, D.D., LL.D., 1855-67; Alexis Caswell, D.D., LL.D., 1867-72; Ezekiel G. Robinson, D.D., LL.D., 1872-89; E. Benjamin Andrews, LL.D., 1889-97; W. H. P. Faunce, D.D., 1897—

BROWSE, *v.* *browz* [*F. brouter*, and *brouster*, to nibble off the sprigs and buds—from *OF. broust*, a sprig: *Sp. broza*, brushwood: mid *L. brustum*, pasture]: to eat the tender leaves and branches of trees and shrubs, as cattle or sheep; to eat any growing thing; to graze; to pasture: *N.* the tender branches of trees or shrubs. **BROW'SING**, *imp.* eating tender leaves and branches; **PASTURING** on fields: **GRAZING**. **BROWSED**, *pp. browzd*.

BRUCE.

BRUCE: surname of a family illustrious in Scottish history, descended from Robert de Bruis, a Norman knight, who accompanied William the Conqueror to England 1066, and died soon afterward.

His younger son, Adam, who acquired large possessions in Yorkshire, left a son, Robert de Brus of Cleveland, companion in arms of Prince David of Scotland, afterward David I., from whom he received a grant of the lordship of Annandale, held by the tenure of military service. At the commencement of the war in England between Stephen and Matilda, niece of the King of Scots, Robert de B. adhered to the former, and renounced his allegiance to David, resigning his lands in Annandale to his son Robert. In 1138 he was sent by the barons of the north of England to negotiate with David, who had advanced in support of his niece's claims as far as Northallerton, Yorkshire. In the battle of the Standard which followed he took prisoner his son Robert, then fourteen years of age, who, as lord of Annandale, fought on the Scottish side. He died 1141, and his English estates were inherited by his eldest son, Adam, whose male line terminated in Peter de B. of Skelton, constable of Scarborough Castle 1271.

Robert de B., 2d lord of Annandale, had two sons: Robert—who married a natural daughter of William the Lion, and died, without issue, before 1191—and William, whose son, Robert, 4th lord of Annandale, married Isobel, second daughter of David, Earl of Huntingdon and Chester, brother of William the Lion, and thus laid the foundation of the royal House of Bruce. He died 1245.

BRUCE, ROBERT, King of Scotland: 1274, Mar. 21—1329, June 7 (reigned 22 years); eldest son of Robert, Earl of Carrick who died 1304. This most heroic of the Scottish kings in youth favored the English interests, in the expectation, doubtless of his father being preferred to the Scottish throne. In 1296, as Earl of Carrick, he swore fealty to Edward I. at Berwick, and the following year he renewed his oath of homage at Carlisle. Shortly afterward, he abandoned the cause of Edward, and, with his Carrick vassals, joined the Scottish leaders in arms for the independence of their country. On the defeat of the Scots, a few months afterward, at Irvine, B. made his peace with the English monarch. After Wallace's defeat at Falkirk, B. burned the castle of Ayr to the ground, to prevent its falling into the hands of the English, and retired into the recesses of Carrick. In 1299, the year after Wallace had resigned the regency, B., then in his 25th year, was admitted one of the four regents, who ruled the kingdom in the name of Baliol. In the three campaigns which subsequently took place, previous to the final subjugation of Scotland, B. continued faithful to Edward, and in 1305 was consulted in the settlement of the government. With John Comyn, called the Red Comyn, nephew of Baliol, he appears to have entered into some agreement as to their rival claims to the throne. In an interview between them, in the church of the Minorite Friars, Dumfries, 1305-6, Feb. 4, a quarrel took place, and B., in a paroxysm of passion,

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stabbed Comyn with his dagger. Rushing out to his attendants, he exclaimed: 'I doubt I have slain the Red Comyn.' 'You doubt!' cried one of them; 'I mak sicker!' (i.e. sure), and running into the church with some others, slew Comyn and his brother, who attempted to defend him. B. hastened to Lochmaben Castle, assembled his vassals, and asserted his right to the throne. Two months after (Mar. 27), he was crowned king at Scone. An English army, under the Earl of Pembroke, nominated by Edward, gov. of Scotland, took possession of Perth, and, on the night of June 18, attacked B. in the wood of Methven, compelling him to retreat into the wilds of Athole. At Dalry, near the head of Loch Tay, B. was attacked by Alexander, Lord of Lorn, chief of the Macdougals, husband of the aunt of the Red Comyn, and compelled to retire. Sending his queen and her ladies to Kildrummie Castle, Aberdeenshire, under the charge of Nigel Bruce and the Earl of Athole, he, with 200 followers, crossed Loch Lomond, and had recourse for subsistence to the chase. B. next took refuge in the little island of Rathlin, on the n. coast of Ireland, where he remained all winter, and was supposed to be dead. In his absence, the English took the castle of Kildrummie, hanged Nigel Bruce and other chiefs who had defended it, and tore the queen and Princess Marjory from the sanctuary of St. Duthac, Ross-shire. All B.'s estates were confiscated, and he and his adherents excommunicated by the pope's legate at Carlisle. In the spring of 1307, with about 300 men, B. landed in Carrick, and at midnight surprised the English garrison in his own castle of Turnberry; but before a superior force he retired into the mountainous districts of Ayrshire. At Loudon Hill 1307, May 10, he defeated the English under the Earl of Pembroke, and, three days after, overthrew another party under the Earl of Gloucester. In less than two years he wrested from the English nearly the whole of Scotland. His authority being now established, in 1309 B. advanced to Durham, laying waste the country. The same year, Edward II. of England invaded Scotland, but was compelled to retreat from Edinburgh to Berwick-upon-Tweed. In the harvest of 1312, the Scots again invaded England, but unsuccessfully. B. now reduced the Isle of Man also. On his return in the autumn of 1313, he found his brother, Edward Bruce, engaged in the siege of Stirling Castle, held by Sir Philip Mowbray for the English. A treaty was entered into, by which Mowbray bound himself to surrender it, if not relieved before June 24 following. This led to the memorable battle of Bannockburn, 1314, June 24, at which B. commanded in person. The English, under Edward II., amounting, it is said, to about 100,000 men, were totally routed, leaving 30,000 dead upon the field; while the Scots, numbering only 30,000, and 15,000 camp-followers, lost about 5,000. In 1317, B. passed over to Ireland, to assist his brother, Edward, elected king of that country, and defeated the Anglo-Irish under the Baron of Clare; and in the spring of 1318 the Scots army invaded England by Northumberland. Another invasion

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of Scotland by the English king, who was compelled to retreat, was followed by B. again marching into England. After besieging Norham Castle, he defeated Edward once more at Biland Abbey, Yorkshire. A truce was, in consequence, ratified between the two kingdoms at Berwick; 1323, June 7, to last 13 years. On the accession of Edward III., 1327, hostilities recommenced; and the Scots being again victorious, a final treaty was ratified in a parliament at Northampton 1328, Mar. 4, recognizing the independence of Scotland, and B.'s right to the throne. His warfare was now accomplished, and suffering under the disease of leprosy, he spent the last two years of his life at Cardross Castle, on the n. shore of the Firth of Clyde. His heart, extracted and embalmed, was delivered to Sir James Douglas, to be carried to Palestine and buried in Jerusalem. Douglas was killed fighting against the Moors in Spain, and the sacred relic of B., with the body of its devoted champion, was brought to Scotland, and buried in the monastery of Melrose. B.'s body was interred in the Abbey Church of Dunfermline; and, in clearing the foundations for a third church on the same spot 1818, his bones were discovered. He was twice married: (1) to Isabella, daughter of Donald, tenth Earl of Mar; issue, a daughter, Marjory, wife of Walter the high steward, whose son ascended the throne as Robert II.; (2) to Elizabeth, daughter of Aymer de Burgh, Earl of Ulster; issue, one son, who succeeded him as David II., and two daughters.

BRUCE, DAVID (DAVID II., King of Scotland): 1324—1371, Feb. 22; son of King Robert Bruce; succeeded his father when only five years old. In terms of the treaty of Northampton, he had married, when four years old, Joanna, daughter of Edward II. of England, and 1331, Nov. 14, he was crowned with her at Scone. In 1333, the success of Edward Baliol and the English party forced David's guardians to send him and his consort to France; but on the dispersion of Baliol's adherents, David returned to Scotland 1341. He made three unsuccessful inroads into England, and on a fourth invasion, 1346, was taken prisoner at the battle of Neville's Cross, near Durham, and conveyed to the Tower of London. Thence he was removed to Odiham, in Hampshire, and not released till 1357, when his ransom was fixed at 100,000 marks. His queen dying 1362, he married Margaret Logie, a Scottish gentlewoman of singular beauty, whom he divorced 1370. He had no issue; and in his latter years he was engaged in several intrigues with England, with the view of excluding his nephew, Robert, the steward of Scotland, the next heir, from the throne. He died at Edinburgh Castle.

BRUCE, EDWARD, King of Ireland: d. 1317, Oct. 5; brother of King Robert Bruce. He was a chivalrous but rash and impetuous prince; was actively engaged in the struggle for Scotland's independence; and 1308, after defeating the English twice, made himself master of Gallogway. In 1315, the chieftains of Ulster tendered to him the crown of Ireland, on condition of his assisting them to

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expel the English from the island. With a small army of 6,000 men, he embarked at Ayr, and reached Carrickfergus May 25, accompanied by Sir Thomas Randolph, Earl of Moray, Sir John of Soulis, Sir John the Stewart, Sir Fergus of Ardrossan, and other Scottish knights of renown. His rapid victories soon made him master of the province of Ulster, and he was crowned King of Ireland, 1316, May 2, but was slain less than 18 months afterward at the battle of Dundalk.

BRUCE, GEORGE: 1781–1866; b. Edinburgh, Scotland; came to America 1795, following his brother David, who had emigrated earlier. He first apprenticed himself to a printer at Philadelphia, but after several years he and his brother went to New York; and 1806–16 did a prosperous business in book-printing. After 1818 George B. confined his attention to type-founding and made valuable improvements in the art; he and his nephew invented a type-casting machine, still in use. B. was a man of integrity and ability; and held prominent positions in various learned societies and trade-unions.

BRUCE, JAMES: traveller: 1730, Dec. 14—1794, Apr. 27; b. at Kinnaird House, Stirlingshire, Scotland; eldest son of David Bruce, of Kinnaird. Educated at Harrow, he was sent, in the winter of 1747, to the Univ. of Edinburgh, with the intention of studying law; but changing his views, he went to London, and having, 1754, Feb., married the daughter of a wine-merchant's widow, became a partner in the business. His wife dying within a year, he made a tour on the continent. and on his father's death 1758, he succeeded to the estate of Kinnaird. In 1761 he retired from the wine trade, and in 1763 was appointed consul-gen. at Algiers. He remained there about two years, studying the oriental languages, and acquiring the rudiments of surgery. He then went to Aleppo, where he took further instructions in the medical art, being resolved to travel in the character of a physician. In 1768, June, he proceeded to Alexandria, and from Cairo set out on his famous journey to Abyssinia, which forms an epoch in the annals of discovery. Sailing up the Nile to Syene, he crossed the desert to Cosseir, and arrived at Jeddah 1769, Apr. After various detentions, he reached Gondar, cap. of Abyssinia, 1770, Feb.; and Nov. 14, succeeded in reaching the sources of the Abawi, then considered the main stream of the Nile. This accomplishment of the chief object of his journey filled him with exultation. He remained about two years in Abyssinia, and returning by way of Sennaar and the desert of Assouan, after great hardship reached Alexandria, whence he embarked, 1773, Mar., for Marseilles. In France he spent considerable time, visiting the celebrated Count de Buffon, and other distinguished men, and 1774 he returned to Scotland. In 1776, he married Mary, daughter of Thomas Dundas, Esq., of Fingask, by whom he had two sons and one daughter. His long-expected *Travels to Discover the Sources of the Nile, in the Years 1768–1773*, were published 1790, 5 large 4to,

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vols., with plates and charts. The work contained such curious accounts of the manners and habits of the people of Abyssinia that it startled the belief of many, and some of his statements were set down as fabrications. Among other doubters were De Tott in France, and Dr. Johnson in England. Modern travellers, including Salt, Pearce, Burckhardt, Belzoni, and others, have, however, fully confirmed his statements. B. died at Kinnaird, of a fall down-stairs.

BRUCE, MICHAEL: minor Scottish poet: 1746, Mar. 27—1767, July 6; b. Kinneswood, Kinross-shire, Scotland; son of a weaver: was, in his younger years, employed as a herd-boy. In 1762, he was sent to Edinburgh Univ. to study for the ministry, and when not at college, was engaged as a village schoolmaster. He had all his life to struggle with poverty, and his frame being weak, melancholy took possession of his mind, his constitution began visibly to decline, and he died of consumption. His poems, few in number, and of a tender and pathetic description, were published by the Rev. John Logan, his fellow-student and associate at college, Edinburgh, 1770. His last composition was a touching elegy on his own approaching death.

BRUCE, ROBERT DE, fifth lord of Annandale: 1210–95; son of Robert fourth lord; and competitor with John Baliol for the crown of Scotland. On the death of his mother, the Princess Isobel, 1252, he did homage to Henry III. for her lands in England, and in 1255 was made sheriff of Cumberland, and constable of the castle of Carlisle. About the same time he was appointed one of the fifteen regents of Scotland, in the minority of Alexander III. In 1264, he led, with Comyn and Baliol, the Scottish auxiliaries to the assistance of the English monarch at the battle of Lewes, where he was taken prisoner, but released after the battle of Evesham, the following year. On the Scottish throne becoming vacant at the death, 1290, of Margaret, the 'Maiden of Norway,' granddaughter of Alexander III., Baliol and Bruce claimed the succession, the former as great-grandson of David, Earl of Huntingdon, by his eldest daughter, Margaret; the latter as grandson, by the earl's second daughter, Isobel. Edward I. of England, to whom the dispute was referred, decided in favor of Baliol, 1292, Nov. 19. To avoid swearing fealty to his successful rival, B. resigned Annandale to his eldest son, Robert de B., Earl of Carrick. He died at his castle of Lochmaben, Dumfriesshire, leaving three sons and a daughter.

BRUCE, ROBERT DE, Earl of Carrick: d. 1304; eldest son of Robert, fifth Lord of Annandale: accompanied King Edward I. of England to Palestine 1269, and was ever afterward greatly esteemed by that monarch. On his return to Scotland, he married, 1271, Martha Margaret, Countess of Carrick, and in her right became Earl of Carrick. Following the example of his father, to avoid doing homage to Baliol, he resigned the lordship of An-

BRUCEA—BRUCITE.

nandale to his eldest son, Robert, future king of Scotland, then a minor. Retiring to England, he was, on the death of his father, 1295, appointed constable of castle of Carlisle; and in the following year, when Baliol renounced the authority of Edward, and assisted by the Comyns, had recourse to arms, B. fought on the side of the English. After the battle of Dunbar, in which the Scots were defeated, and Baliol compelled to relinquish the sovereignty, he made application to Edward for the vacant crown, but was refused it.

BRUCEA, *brós'ē-a*: genus of shrubs somewhat doubtfully referred to one or other of the allied natural orders *Rutaceæ* (q.v.), *Simarubaceæ* (q.v.), and *Xanthoxylaceæ* (q.v.).—*B. antidysenterica*, or *ferruginea*, is an Abyssinian species, the leaves of which are said to be tonic, astringent, and useful in dysentery. Those of *B. Sumatrana*, native of the Indian archipelago, China, etc., have the same medicinal properties. They are intensely bitter.—The Abyssinian species acquired a factitious importance in the beginning of the 19th c., from a mistaken belief that it produced the dangerous false Angostura bark (see **ANGOSTURA BARK**), and in this belief the name *Brucine* (q.v.) was given to an alkaloid really produced by the *nux vomica* (q.v.) and other species of *Strychnos* (q.v.).

BRUCHSAL, *brúk'sál*: town of the grand duchy of Baden; on the Salzbach, and on the railway between Heidelberg and Karlsruhe, 12 m. n.e. of Karlsruhe. B., a place of considerable antiquity, has three suburbs. The old castle of the prince-bishops of Speier, who took up their residence here early in the 11th c., is still standing, and in the church of St. Peter are some ancient tombs. The people are engaged chiefly in the wine trade. B. has two prisons organized on a modified form of the Pennsylvanian system. Pop. (1880) 11,373; (1890) 11,902.

BRUCHUS, n. *brók'kūs* [L.]: a genus of beetles belonging to the section *Tetramera*, and the family *Rhyncophora* or *Curculionidæ*. It contains small beetles which deposit their larvæ in the germs of leguminous plants, and when hatched devour their seed. *Bruchus Pisi* is destructive to the garden-pea. The holes so often observed in peas are made by this insect to effect its escape.

BRUCINE, n. *brós'in* [after *Bruce*, the traveller]: one of the alkaloids (q.v.) present in *Strychnos Nux Vomica* (an African plant, ord. *Apoc'ynac'æ*), with strychnine, etc. It is not so abundant as the strychnine, nor is it so poisonous. It is characterized mainly by giving a blood-red color with concentrated commercial nitric acid, and, indeed, the red color always yielded by *nux vomica*, and occasionally by strychnine, when treated with nitric acid, is due to the presence of B. The name was given under a mistake: see **BRUCEA**.

BRUCITE, n. *brós'it* [after Dr. *Bruce* of New York]: a mineral, a native hydrate of magnesia, occurring in serpentine in New Jersey, and in mines of chrome in Texas: sym. MgH_2O_2 .

BRÜCKENAU—BRÜGES.

BRÜCKENAU, *brük'hén-ow*: village of Bavaria, on the Sinn, 36 m. n.e. of Würzburg. It is famous in connection with the baths of B., picturesquely situated in a beautiful part of the valley of the Sinn, about 2 m. w. from the village. The grounds are tastefully laid out in gardens, and charming walks traverse the surrounding woods. The place is a favorite summer resort of the Bavarian court. B. has paper-mills. Pop. 2,000.

BRUCKER, *brúk'kér*, JOHANN JACOB: 1696-1770; b. Augsburg: German historian, and divine. After a brilliant career as a student at Jena, he became a successful preacher of the Reformed Church. His history of philosophy, *Historia critica philosophiæ a mundi incunabulis ad nostram usque ætatem deducta* (Leipsic, 1741-44, 5 vols. 4to, reprinted with a 6th vol. 1767), is the great work of his life, which placed him in the first rank among German scholars and philosophers of the 18th c. in Germany. The number of his publications was very great. He was correcting and superintending Luther's translation of the New Testament, when his death at Augsburg cut short his work.

BRÜGES, *brü'jěz*, Fr. *brüz*h (Ger. *Brügge*): city of Belgium, cap. of the province of West Flanders; in a fertile plain about 8 m. from the sea, with which it is connected by the three canals from Ghent, L'Ecluse, and Ostend, the latter admitting the largest sea-going ships; lat. 51° 12' n., long. 3° 14' e. B. derives its name from its many bridges, all opening in the middle for passage of vessels. The ramparts surrounding the city are an agreeable promenade. The streets have a venerable and picturesque appearance, but they are greatly deserted, the population of the city being now scarcely a quarter of what it was during the middle ages. Among the most interesting buildings are the town hall, with a lofty tower and a celebrated set of 48 bells; a Gothic senate-house, built about the close of the 14th c.; a court of justice, containing a famous carved chimney-piece of 1559; the church of Notre Dame, with its spire 450 ft. high, its many valuable paintings, and a statue of the Virgin (said to be by Michael Angelo), for which Horace Walpole offered 30,000 florins, and its splendid monuments of Charles the Bold and his daughter Mary, wife of the Emperor Maximilian; the cathedral of St. Sauveur, not remarkable for its exterior, but containing paintings by eminent masters; St. John's Hospital, with celebrated pictures by Memling, etc. The Acad. of Painting contains several fine pictures by J. van Eyck. B. has manufactures of woolen, linen, cotton, lace, leather, cordage, and tobacco; and distilleries, sugar and salt refineries, and ship-building yards. Railways connect B. with Ostend, Ghent, and other cities of Belgium and the continent. B. is a very ancient city. Here, it is said, St. Chrysolus preached the gospel as early as the 3d c. In the 7th c., B. was the cap. of the surrounding dist. called Flanders, and before the conquest of England by the Normans, its commercial importance was established.

BRUGG—BRÜHL.

In the beginning of the 13th c. it was the central mart of the Hanseatic League; and in the following century it may be said to have become the metropolis of the world's commerce. Commercial agents from 17 different kingdoms resided here, and no less than 20 ministers from foreign courts had mansions within its walls. Its population at this time amounted to upward of 200,000. In 1488, the citizens rose in insurrection against the Archduke Maximilian, and with the harsh measures of repression which ensued commenced the commercial decline of Bruges. Many of the traders and manufacturers, driven forth from their own country, settled in England, and from this time may be dated the beginning of English manufacturing superiority. In the 16th c., however, the tapestry of B. was still celebrated throughout Europe, and the famous Gobelin tapestry of Paris is said to owe its origin to a manufacturer of Bruges. The city was taken by the French 1794, and soon after incorporated with the French empire; but in 1815 it became a part of the kingdom of the United Netherlands, and in 1830 of the Belgian monarchy. Pop. (1900) 52,867.

BRUGG, *brûg*, or BRUCK, *brúk*: village of Switzerland, canton of Aargau, on the right bank of the Aar, near the mouth of the Reuss, about 9 m. n. e. of Aarau. It is interesting as occupying a part of the site of the ancient *Vindonissa*, the strongest fortress, as well as the most important settlement of the Romans in Helvetia; and also as the cradle of the House of Hapsburg, to whom, in early times, it belonged. The remains of the castle of Hapsburg, founded by Count Radbod of Altenburg 1020, are still seen on a wooded height, about 2 m. from the village. Nearer, is the Abbey of Königsfelden, founded 1310 by the wife and daughter of the Emperor Albert, who, two years before, was murdered on the spot by his nephew and others, for which a terrible revenge was taken on the relatives of the murderers. In the vaults beneath the abbey are interred many of the members of the Austrian royal family. Zimmermann was a native of this place. High conical roofed towers guard the exit and entrance to B., Pop. abt. 1,500.

BRÜHL, *brül*: town of Rhenish Prussia, about 9 m. s.s.w. of Cologne; on the railway to Bonn. It is surrounded by old walls, and has a splendid château, erected in the early part of the 18th c. by the elector Clement Augustus of Bavaria. There is also an ancient Franciscan convent, now converted into a seminary for Rom. Cath. schoolmasters. After his banishment from France 1651, Cardinal Mazarin took up his residence in B. Pop. 4,000.

BRÜHL, HEINRICH, Count von BRÜHL, Prime-Minister of Augustus III. (Augustus III. King of Poland, and Elector of Saxony): 1700–1763, Oct. 28; b. Weissenfels: signal example of an unworthy minister and venal statesman. In early life he entered as a page into the service of the Duchess of Sachsen-Weissenfels. His winning address and tact gained for him rapid promotion through

BRUIN—BRUISE.

several offices of state, until, 1747, he became prime-minister to the idle and unpatriotic Augustus III. Never was a ruler more slavishly obeyed by a statesman. B. would follow the prince, as he strolled about smoking, without speaking a word for a whole day; or, when his majesty lazily inquired: 'Bruhl, have you any money for me?' 'Yes, sire,' would be the constant reply; but in order to be able to give this answer as frequently as it was demanded, B. drained the coffers of the state, and burdened the country with debt. He, however, contrived to enrich himself, and to accumulate honors and titles. By Elizabeth of Russia, he was invested with the order of St. Andrew, and by Charles VI. of Austria, he was made a count of the empire. He kept 200 servants, paid his body-guard better than Augustus did his, furnished the costliest table, had the finest wardrobe, and in short, maintained the most splendid establishment in the kingdom. 'Of all statesmen,' said Frederick II., 'Bruhl has collected the greatest quantity of fine clothes, watches, lace, boots, shoes, and slippers!' The effect of B.'s reckless robbery of the national finances to gratify the dissolute Augustus and himself, made itself felt at the outbreak of the Seven Years' War, when the country could furnish only 17,000 men to oppose Frederick of Prussia, who surprised and captured the whole Saxon army in its camp at Pirna. Augustus and B. fled to Warsaw. When peace was concluded they returned to Dresden, where Augustus died 1763, Oct. 5; followed by his worthless parasite, Oct. 28. B.'s palace is still one of the principal buildings in Dresden, and his library, 62,000 vols., forms a chief part of the Royal Library Dresden.

BRUIN, n. *bró'in* [Dan. and Dut. *bruin*; Icel. *brun*, brown—from the color]: the familiar name for a bear of the German nursery fables.

BRUISE, n. *bróz* [F. *briser*, to break—from O.H.G. *bristan*; OF. *bruiser*; Gael. *brisd*, to break; *bruis*, fragments]: a break or crush of the flesh without breaking the skin; an injury on the flesh by its being crushed or struck with a heavy or blunt substance, causing discoloration, blue, red, and yellow successively; a contusion: V. to crush or hurt by pressure or beating; to pound or reduce to coarse powder, as minerals or grain. BRUISING, imp. BRUISED, pp. *brózd*. BRUISER, n. *bróz'ér*, he who, or that which; a prize-fighter. — SYN. of 'bruise, v.': to squeeze; pound; crush; bray; box.

BRUISE, or CONTUSION: injury inflicted by a blow or sudden pressure, in which the skin is not wounded, and no bone is broken or dislocated. Both terms, and especially the latter, are employed in surgery to include all such injuries in their widest range, from a black eye to a thoroughly crushed mass of muscle. In the slighter forms of this injury, as in ordinary simple bruises, there is no tearing, but only a concussion of the textures, the utmost damage done being the rupture of a few small blood-vessels, which occasions the discoloration always observed in

BRUISE.

these cases. In more severe contusions, the subjacent structures—muscles, connective tissue, vessels, etc.—are more or less ruptured, and in extreme cases are thoroughly crushed, and usually become gangrenous. The quantity of blood extravasated mainly depends upon the size and number of the ruptured blood-vessels, partly also on the nature of the textures of the injured part. Thus, a lax tissue, as that of the eyelids, favors the escape of blood into the surrounding parts. Moreover, the constitution of the patient has some influence, and many persons, especially (according to Mr. Paget, in his article on 'Contusions' in Holmes's *System of Surgery*, vol. i.) pallid, fatty, soft-skinned women, though suffering from no apparent disease, are subject to extravasations, and consequently to discolorations, very disproportionate to the injuries that cause them.

The most characteristic signs of a recent contusion are more or less shock (q.v.), pain, swelling, and discoloration of the surface from effused blood (commonly known as *Ecchymosis*, q.v.). There is nothing special in the character of the shock, but it is noticeable that it is most severely felt in injuries of special parts—as the testes, the breasts, and the larger joints, which are often followed by remarkable general depression, faintness, loss of muscular power, and nausea. The immediate pain following the blow is succeeded by a feeling of numbness, which, after a varying time, unless the part is killed, gives place to a heavy, aching pain. Though some depression of the parts may usually be observed immediately after the infliction of the blow, swelling rapidly follows, as may be seen in the case of a child receiving a blow on the head, or of the wale that rises after the lash of a whip. In lax parts, such as the eyelids, the swelling is often considerable, and may remain for a week or more; but in other parts, it usually subsides in two or three days. The discoloration of the skin consequent on blows is of a more or less purple tint, varying from black to crimson or pink. 'Blackness,' says Mr. Paget (*op. cit.*), 'usually indicating intense injury, is probably due to the extravasation of a large proportion of entire blood; crimson or pink tints, to the prevalence of a blood-stained fluid; blue, to the degrees in which blackness is veiled by the cuticle and skin, as the color of blood in veins is; and perhaps some of the shades of pink to the partial aëration of the blood by the penetration of air through the epidermis. After a variable time, proportionate to the severity of the injury, these colors fade out, passing usually through gradually lightening shades of brownish olive, green, and yellow.' The causes of these changes of color are not clearly known; as, however, the changes are not observed in bruises of parts removed from air and light, they are probably due to oxidation and actinic agency. When a severe bruise tends to a natural cure, and there is no inflammation or sloughing, the effused blood is generally absorbed, the liquid portion rapidly disappearing, while the blood-cells are more slowly removed. In some cases, it is probable that the effused

BRUIT—BRUMAIRE.

blood becomes organized into vascular connective tissue, which takes part in the repair of the injured tissue. A bruise in which active inflammation with suppuration ensues, or in which sloughing takes place, must be treated according to the ordinary rules for those affections. One or two ill consequences following partial recovery, require notice. Thus, in some organs, as the breast, abscess may ensue long after a blow; or a sensitive indurated lump may remain; or (more commonly) there may be long-continued pain, without change of texture; or, lastly, cancer may ensue. Blows on superficial bones, as those of the skull, are frequently followed by very painful thickening of the periosteum: and a muscle violently struck may be paralyzed and rapidly waste away; and constitutional diseases, such as gout and rheumatism, are well known to localize themselves with special severity in parts that have been seriously bruised.

With regard to treatment, simple and not very severe bruises require little treatment but the rest necessary for the avoidance of pain; but the removal of the swelling and discoloration may be hastened by the application of various local stimulants, which seem to act by accelerating the circulation through the bruised part, and promoting the absorption of the effused fluid. Friar's balsam, compound soap liniment, or poultices made with the roots of black bryony beaten to a pulp, are popular remedies of this class. Mr. Paget (see his article quoted above) regards the tincture of arnica as the best application. Where the skin is thick, it may be gently rubbed over the bruised part in an undiluted state; where the skin is thinner, it should be mixed with an equal bulk of water; or, which is probably better, it may be constantly applied as a lotion if diluted with five or six parts of water. Pugilists, who are probably better acquainted with ordinary bruises than any other class of men, are in the habit of removing the swelling of the eyelids that often naturally occurs during a prize-fight, to such an extent as to close the eyes, by at once puncturing the eyelid at several points with a lancet; and their favorite remedy for a black-eye or other bruise on the face is a fresh beef-steak applied locally, as a poultice. Bruises of a more severe nature, as when there is much breaking or crushing of the tissues, must, of course, at once be placed in the hands of a surgeon.

BRUIT, *n.* *brôt* [F. *bruit*, a noise—from *bruire*, to roar. It. *bruito*, a muttering: Gael. *briot*, idle tattle—*lit.*, a muttering noise]: a report; fame; in *med.*, applied to various sounds heard in auscultation in disease of the thorax, or its organs: *V.* to spread a report; to noise abroad. **BRUIT'ING**, *imp.* **BRUIT'ED**, *pp.* noised or rumored abroad.

BRUMAIRE, *brú-mär'* [Lat. *bruma*, winter]: division of the year in the republican calendar of France. It includes the time from Oct. 22 to Nov. 20. The celebrated 18th B., which witnessed the overthrow of the Directory and the establishment of the sway of Napoleon, corresponds with 1799, Nov. 9. of the Gregorian calendar.

BRUMAL—BRUNCK.

BRUMAL, a. *bró'mǎl* [F.—from L. *bruma*, winter]: of or relating to winter.

BRUME, n. *bróm* [F.]: mist; fog; vapor.

BRUMIDI, *brô-mé'dē*, **CONSTANTINE**: 1805–80; b. Rome; son of a Greek father and an Italian mother. At Rome, he took a course in the College of Fine Arts, came to the United States 1852, and began work on church decorations in New York, Philadelphia, and the city of Mexico. In 1854, he went to Washington; and was engaged on frescoes in the national capitol. In 1864, he commenced the allegorical and historical paintings on the domical ceiling of the canopy, with an area of nearly 5,000, sq. ft., 180 ft. above the floor. The central group is in honor of Washington. The original states are represented by 13 female figures arranged in the foreground, whose drapery, decoration, and coloring indicate the products and situation of the states in their geographical order from New Hampshire to Georgia. Around the base is an allegory of the Revolution in six emblematic groups. These represent: 1. *The Fall of Tyranny*; 2. *Agriculture*; 3. *Mechanics*; 4. *Commerce*; 5. *Marine*; 6. *Arts and Sciences*.

BRUMMAGEM, a. n. *brūm'ă-jēm* [colloquial, but old name of *Birmingham*]: in *familiar slang*, denoting anything sham or fictitious; denoting spurious money, as made at Birmingham.

BRUMMEL, *brum'mēl*, **GEORGE BRYAN (BEAU BRUMMEI)**: 1778–1840; b. London. He was educated at Oxford, and achieved success in writing Latin verse. Being a model of taste and elegance, and a favorite with the Prince of Wales, he became the arbiter in all questions of fashion and etiquette. As long as his money lasted or the Prince of Wales contributed, he lived in a splendid establishment in London, and associated on equal terms with the nobility. Having squandered his fortune, he became a reckless gambler, and in 1815 fled from his creditors to France, where he died in poverty.

BRUNCK, *brūnk*, **RICHARD FRANÇOIS PHILIPPE**: 1729, Dec. 30—1803, June 12; b. Strasburg: critic and philologist. He was educated under the Jesuits in Paris, but abandoned his studies, and was a military commissary in the Seven Years' War. A professor in Giessen, with whom B. happened to lodge while the army was in winter quarters, revived in him the love of classical studies. Returning to Strasburg he gave all his spare time to Greek, and soon distinguished himself as an able but adventurous critic and emendator. His belief that all inaccuracies in ancient Greek writings were introduced by copyists, often led him astray; but, since the revival of learning, few critics have done more for the progress of Greek literature. His first work, *Analecta Veterum Poëtarum Græcorum* (1772–76), was followed by several editions of Anacreon (1778–86), and editions of Apollonius Rhodius (1780) and Aristophanes (1781–83), *Poëta Gnomici* (1784), Virgil (1785), and Sophocles (1786–89). The last of these established a new era in the criticism of the tragic writers. The out-

BRUNDUSIUM—BRUNEHILDE.

break of the French revolution interrupted B.'s studies. He ardently attached himself to the popular side. During the Reign of Terror, he was imprisoned, but was liberated after the downfall of Robespierre. His means, however, had been so much reduced that he was compelled to sell his valuable library. From this time, 1801, he turned his attention from Greek to Latin literature, and published editions of Plautus and Terence.

BRUNDUSIUM: see BRINDISI.

BRUNE, *brün*, GUILLAUME MARIE ANNE, Marshal of the first French empire: 1763, March 13--1815, Aug. 2; b. Brives-la-Gaillarde. His education brought him early into connection with the men of the Revolution. With Danton he helped to establish the Cordelier's Club. After the conquest of Belgium he was sent as civil commissary to that country, but his warlike aspirations soon induced him to enter the military service. In 1797, he became brigadier under Napoleon in the army of Italy, and distinguished himself at Arcola and Rivoli, where he was made gen. of division and leader of the advance guard. Sent by the directory to Switzerland, 1798, he executed his orders with brilliant success. In 1799, he was appointed to the command of the army of Holland, where he won the repute of being one of the best generals of his age. He vanquished the Anglo-Russians at Bergen, 1799, Sep. 19; and on Oct. 19, forced the Duke of York, commander-in-chief of the combined armies, to a humiliating capitulation at Alkmaar. In 1803, he was named ambassador to the Ottoman Porte, and was received by Selim III. with great distinction. In 1804, he obtained the dignity of marshal, and in 1805 returned to France. Two years afterward B. became gov.gen. of the Hanseatic towns, and was charged with the conquest of Pomerania, but through the unnecessary distrust of Napoleon, he was recalled, and his future services dispensed with. After the fall of the emperor he declared for the Bourbons, but his offers were rejected, and, in consequence, he joined Napoleon after his return from Elba. He was now made a peer, but the battle of Waterloo destroyed his prospects. He again made his submission, but was barbarously assassinated at Avignon, by the populace, who were infuriated against him on account of certain crimes laid to his charge, of which he seems to have been entirely guiltless.

BRUNEHILDE, *bró' nū-hīl'dā*, or BRUNHAUT, *brün-ho'*: 534-613: daughter of Athanagild, King of the Visigoths: became queen of Austrasia (568) by her marriage with Sigebert, one of the four sons of Clotaire I. Her sister Galsunda had married Chilperic, King of Neustria, and a brother of Sigebert, who, at the demand of his mistress Fredegonda, abandoned and murdered his queen, and married Fredegonda. B. now determined to avenge the death of her sister, and induced her husband to invade the dominions of his brother Chilperic. While besieging Tournay he was killed and B. was made prisoner. Having married one of the sons of Chilperic, she escaped to Austrasia, deposed

BRUNE ISLAND—BRUNEL.

Childebert, who was occupying the throne; and re-established her authority. But she became ambitious and reckless. Having instigated a war between her grandsons, she was finally captured by Clotaire II., son of Fredegonda. After subjecting her to torture and insult for three days, he caused her to be tied to the tail of a wild horse, which being turned loose, dragged her to death. Her body was then burned and the ashes scattered to the winds.

BRUNE ISLAND *brô-nā'*: off the s. part of the e. coast of Tasmania, from which it is separated by D'Entrecasteaux Bay. It has a length of 32 m., breadth from 1 to 6 m.; and its e. or outside coast is indented by a bay, which takes its name from the *Adventure*, one of Cook's two vessels during his second voyage.

BRUNEL, *bru-nēl'*, **ISAMBARD KINGDOM**: engineer: 1806, Apr. 9—1859, Sep. 15; b. Portsmouth, Eng.; son of Sir Mark I. B. He was educated at the college of Henri Quatre, Caen, France. He commenced practical engineering 1826, under his father at the Thames Tunnel, and in the progress of that great work had more than once to save his life by swimming. He assisted in his father's experiments for making carbonic acid gas a motive power, and was designer and civil engineer of the *Great Western*, the first steamship built to cross the Atlantic; and of the *Great Britain*, the first ocean screw-steamer. The *Great Eastern*, the largest vessel ever built in the world, was erected under his sole direction. In 1833, B. was appointed chief-engineer to the Great Western railway, Eng., and designed and constructed the whole of the tunnels, bridges, viaducts, and arches on this line, and extension branches. Among other docks at English seaports, in the improvement and construction of which he was engaged, were the Bute docks at Cardiff, and the old North Dock at Sunderland. In 1842, he was employed by government to construct the Hungerford Suspension-bridge across the Thames at Charing Cross, London. In 1850-53, he constructed the works of the Tuscan portion of the Sardinian railway. Made a fellow of the Royal Soc., 1830, he was chosen on the council, 1844. He was also vice-pres. of the Institution of Civil Engineers, and of the Soc. of Arts; a fellow of the Astronomical, Geological, and Geographical Societies, and Chevalier of the Legion of Honor. See his *Life* (1870).

BRUNEL, Sir **MARK ISAMBARD**: engineer of the Thames Tunnel: 1769, Apr. 25—1849, Dec. 12; b. Hacqueville, near Rouen, France; son of an agriculturist. He early showed inclination for mechanics, and at school preferred the study of the exact sciences to the classics. In 1786, he became a sailor in the French navy. In the revolutionary period of 1793, having compromised himself by his political opinions, he escaped from Paris to the United States. His career as an engineer began 1794, when he was appointed to survey for the canal which connects Lake Champlain with the Hudson river at Albany. He afterward was an architect in New York. On his return to Europe, 1799, he married the daughter of William Kingdom, Esq., Plymouth,

BRUNELLESCHI—BRUNETIÈRE.

and settled in England. A plan submitted by him to government for making block-pulleys for ships by machinery was adopted, and he was for many years employed in Portsmouth dockyard. He was successful in the construction of public works—in Woolwich arsenal and Chatham dockyard, etc. His most remarkable undertaking was the Thames Tunnel, beneath the bed of the river at London; begun, 1825, Mar.; opened to the public 1843, Mar. Assisted by his son, Isambard K. B. (q.v.), he for ten years pursued a course of experiments for employing carbonic acid gas as a motive power, but the cost of the machinery prevented its introduction as a substitute for steam. Among the less important of B.'s inventions, were machines for making wooden boxes; for ruling paper; for shuffling a pack of cards without using the hands; for the manufacture of nails; and for making seamless shoes for the army—the latter, tried for two years, was abandoned from economical motives. Elected a fellow of the Royal Soc., 1814, he was appointed vice-pres., 1832. He was knighted 1841. See his *Memoir* (2d ed., Lond. 1862).

BRUNELLESCHI, *bró-nēl-lis'kē*, FILIPPO: 1377-1444; b. Florence: one of the greatest Italian architects. He learned first the art of a goldsmith; next, that of a sculptor; and finally applied himself to architecture. He also studied zealously mechanical and mathematical science, and is reckoned the first who established, on a sound basis, the theory of perspective. When still young, B. went to Rome, where he acquired a profound knowledge of ancient architecture, the result of which was, that two ideas completely possessed his mind: the one was, to revive the ancient style of architecture; the other was, to make himself master of the mechanical knowledge of the ancient architects. In 1407, he returned to Florence. In 1420, it was proposed to complete the structure of the cathedral of Santa Maria del Fiore, founded 1296, and now lacking only a dome. A great assembly of architects from all quarters was convened to determine how it might be practicable to cover the vast octangular area. While the debate was going on, B. was earnestly elaborating his own designs; but when he first came forward and proposed his plan, it was so ill received, on account of its supposed absurdity, that B. was 'lifted off his legs, and carried out of the room.' He, however, obstinately persisted in explaining his scheme, and at last succeeded in convincing every one of its feasibility. The work was intrusted to him, and finished, with the exception of the lantern, with which he intended to crown the whole, but was prevented by his death. B.'s dome, measured diametrically, is the largest in the world, and served as a model to Michael Angelo for that of St. Peter's. Besides this *chef d'œuvre*, B. executed several other great works, such as the churches of San Spirito and San Lorenzo, as well as the designs for the Pitti Palace, which originated the beautiful style of Tuscan palace architecture in the 15th c.

BRUNETIÈRE, FERDINAND: French critic: 1849, July 19—————; b. Toulon, France. In 1875, he became editor of the *Revue des Deux Mondes*, a position which he still holds. In 1886, he was made prof. of

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French language and literature in the École Normale Supérieure. He holds a professor's chair also in the Sorbonne and is one of the foremost members of the French Academy. He has published about 20 vols., chief of which are his critical studies on the history of French literature (*Études critiques sur l'histoire de la littérature française*), the latest edition of which appeared 1887. He delivered a course of lectures in Harvard, Johns Hopkins and Columbia Universities 1897. In criticism his keynote is authority. He commends, not what pleases him but what the reader ought to like. Because of his honesty he is respected, feared, and frequently disliked.

BRUNETTE, n. *brû-nět'* [F. *brunette*—from *brun*; O.H. G. *brûn*, brown, dusky]: a girl or woman with a dark or brownish complexion; opposite of *blonde*.

BRUNI, *brŭ'nē*, **LEONARDO**: 1369–1444, Mar 9; b. Arezzo, hence styled *Aretino*; one of the most learned men during the epoch of the revival of Greek learning in Italy. He filled several offices at the papal court, and, at a later period, he was appointed state secretary of the republic of Florence.

B. aided in advancing the study of Greek literature mainly by his literal translations into Latin of Aristotle, Demosthenes, Plutarch, and others. Most of his numerous original works are now nearly forgotten.

BRUNION, n. *brŭn'yŭn* [F. *brugnon*, prune]: a nectarine, a novel variety of peach fruit.

BRUNN, *brŭn*: fortified city of the Austrian empire, cap. of the govt. of Moravia; beautifully situated, partly on the slope of a hill, partly in a pleasant valley, at the confluence of the Schwarzwawa and the Zwittawa; lat. 49° 12' n., long. 16° 37' e. Behind the city, on an eminence, is the castle of Spielberg, formerly the citadel, now used as a state-prison, and noteworthy as the place in which Silvio Pellico was confined, 1822–30. Among the most interesting buildings of B. are the cathedral of St. Peter; St. James's Church, a Gothic edifice, with a tower 276 ft. in height, and a valuable collection of ancient printed books; the Church of the Minorites; and the Augustine convent. There are also several fine palatial residences belonging to the old nobility. B. is one of the most important manufacturing towns in the Austrian dominions. Its woollens are specially celebrated, and it has manufactures also of cotton, silk, ribbons, yarns, glass, leather, soap, tobacco, and dye-stuffs. Napoleon made B. his headquarters before the battle of Austerlitz. Pop. (1881) 82,660; (1890) 95,342; (1900) 109,346.

BRUNNEN, *brŭn'nēn*: village of Switzerland, canton of Schwyz, of which it forms the port, near the mouth of the Muotta, in the Lake of Lucerne. It is beautifully situated at the s.e. bend of the lake, and is celebrated in history as the place where, 1315, Dec., the deputies of the Forest Cantons, who, eight years before, had formed a plan for the liberation of their country from the Austrian yoke, laid the basis of the Helvetic republic.

BRUNNER, *brŭn'nēr*, or **BRUNN**, *brŭn*, **JOHANN CONRAD**: 1653–1727; b. Diessenhofen: Swiss anatomist and

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physician. After receiving the doctor's degree at Strasburg, he visited Paris, London, and Amsterdam, and formed the acquaintance of the most distinguished men of the time. He became prof. at Heidelberg, 1687, and acquired such reputation that he was consulted by the kings of Prussia, England, and Denmark. He published a number of important medical works. He died at Mannheim.

BRUNNOW, *bró'nof*, ERNEST PHILIP Count von: 1797-1875, Apr. 12; b. Dresden: Russian diplomatist. He studied at the Univ. of Leipsic. At the time of the congress of Aix-la-Chapelle, he entered the Russian service, and the ministers Nesselrode and Capo d'Istrias recognized at once his fitness for a diplomatic career. Among other posts he attended the congresses of Troppau and Laybach, acted one year as sec. to the embassy in London, went to the congress of Verona, and then occupied for a time a high office in St. Petersburg. He was present, in a civil capacity, in the campaigns of 1828-9 against the Turks. In the autumn of 1839, he was sent on a special mission to London, to take advantage of the unpleasant feeling between Great Britain and France for drawing the cabinets of St. Petersburg and London closer together, and in the following spring was accredited as permanent ambassador. In this capacity he acquired distinction as a diplomatist. Retiring from London on the outbreak of the war, 1854, he represented Russia in Frankfort, and with Count Orloff, was sent to the conference of Paris, 1856, Feb. Immediately after the treaty of peace had been concluded, he was sent on a special mission to London, to re-establish friendly relations between the courts of St. Petersburg and St. James. He was afterward appointed to the court of Prussia; but in 1858 he returned to his old place in London, where he was a great favorite. He represented Russia at the conferences in London, 1864 and 1871. In recognition of his services, he was raised by the emperor of Russia to the rank of count, 1871, Apr. In 1874, he retired to Darmstadt, where he died.

BRUNO, *bró'no*, GIORDANO: b. Nola, in the kingdom of Naples, about the middle of the 16th c.; died at the stake 1600, Feb. 17: precursor of the school of modern Pantheistic philosophers. He entered, at an early age, the order of the Dominicans, but soon began to express doubts in regard to the doctrines of Transubstantiation and of the Immaculate Conception, in consequence of which he was forced to flee from his convent. Henceforth his life was unsettled. In 1580 he went to Geneva, where he spent two years, but having excited the suspicion and dislike of the strict Calvinists of that city by his general skepticism, he judged it prudent to betake himself to Paris, where he delivered prelections on the 'Great Art' (Logic) of Raymond Lully. His disputes with the bigoted Aristotelians of the Univ. of Paris compelled him to leave France. He passed over into England, where he resided for two years in comparative quiet, enjoying the friend-

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ship of Sir Philip Sidney and the protection of the French ambassador, Michel de Châteauneuf de la Mauvissière. Here he composed his most important works, but having incurred the displeasure of the clergy by his vehement denunciation of the Aristotelian philosophy, and other grave heresies, he returned to Paris, 1585. In 1586 he went to the Univ. of Marburg, where he matriculated; and to Wittenberg, where he became prof.; but being asked to join the Lutheran communion, he refused. On his departure from the city he pronounced an impassioned panegyric on Luther. After spending some time in Prague, Brunswick, Helmstadt, and Frankfort-on-the-Main, he resolved to go back to Italy. He fixed his residence at Padua; but after a stay of two years he went to Venice, where he was arrested by the officers of the Inquisition, and conveyed to Rome, 1598. He was now subjected for two years to persecution, in the vain hope that he would recant; but when all the endeavors of his enemies proved ineffectual, he was brought to the stake, and burned as an obstinate heretic.

B.'s writings, of which the most valuable were in Italian, show throughout a strong, courageous, excitable soul, susceptible of deep enthusiasm, but vainly laboring to attain perspicacity. The *Cena delle Ceneri*, or Evening Conversations on Ash-Wednesday, is an apology for the Copernican astronomy; the *Spaccio della Bestia Trionfante*, or Expulsion of the Triumphant Beast (Par. 1584), is a satirical but somewhat heavy allegory in the style of the times. His greatest works are metaphysical, such as the *Della Causa Principio ed Uno* (On the One Sole Cause of Things), and the *Del Infinito Universo e Mondi* (On the Infinity of the Universe and of Worlds). The doctrine enunciated in these is Pantheistic. B. held that the infinite soul of God did not merely inhabit or pervade the universe, but that the universe was simply a manifestation of Him, therefore itself divine. God was therefore, in the most literal and physical sense, all *in all*. B.'s philosophy, in later times, was quite unappreciated, and even neglected, until Jacobi drew public attention to it in his *Letters on the Doctrine of Spinoza*. Both Spinoza and Descartes were much indebted to Bruno. His influence is discernible also in the Pantheistic speculation of modern Germany. B.'s Italian works were published by Wagner, 1830; the Latin ones by Florentino, 1883. See *Lives* by Bartholomès (Par. 1846); Clemens (Bonn, 1847); Berti (2 vols. Flor. 1868-80); Sigwart (Tüb. 1880); and Brunnhofer (Leip. 1883).

BRUNO, SAINT: 1051-1101; b. Cologne: founder of the Carthusian order of monks. He received his earliest education in the school attached to the Collegiate Church of St. Cunibert. Subsequently, he studied at Rheims, where he distinguished himself so greatly, that Bp. Gervasius appointed him director of all the schools in his diocese. B. soon began to be troubled by the wickedness of his time, and, anxious to escape from the general pollution, he took refuge, with six pious friends, in a desert place

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near Chartreuse, in the diocese of Grenoble. Here, 1086, he founded one of the most austere of all the monkish orders, which received its name from the locality whence it had sprung: see **CARTHUSIANS**. B. and his companions had each a separate cell, in which they practiced the severities of the rule of St. Benedict, keeping silence during six days of the week, and only seeing one another on Sundays. Pope Urban II., one of B.'s most eminent scholars, summoned the saint to Rome, 1089. B. obeyed the call reluctantly, and steadily refused all offers of preferment. In 1094, he established a second Carthusian monastery, called La Torre, in a solitary district of Calabria, where he died. He was not canonized till 1628. B. left no written regulations for his followers. These first made their appearance in a complete form 1581, and were enjoined on all Carthusians by Innocent IX.

BRUNO, THE GREAT, Archbishop of Cologne, and Duke of Lorraine: 928–965, Oct. 11; third son of Henry the Fowler, and the brother of Otto I., Emperor of Germany. Baldrich, Bp. of Utrecht, and afterward Israel Scotigena, and others, were his tutors. His surprising knowledge, sagacity, and eloquence secured immense influence over the bishops and clergy, while his liberality, meekness, and great earnestness of heart, won the affection and reverence of the laity. Summoned by Otto to the imperial palace, he quickly rose to great influence among the chroniclers, poets, and philosophers of the court. At a later period, he was appointed Abp. of Cologne, and lord high chancellor of the empire. He accompanied Otto to Italy 951, and honorably distinguished himself by his fidelity to his brother, when Otto's own son, Conrad, and others of his kindred rebelled against him. As a reward, the emperor appointed him Duke of Lorraine. B. died at Rheims. He wrote a commentary on the Pentateuch, and several lives of saints.

BRUNONIAN, a. *brô-nô'nĭ-an* [named after Dr. John Brown, 1735–1788]: pertaining to or emanating from Brown.

BRUNSWICK: town, port of entry, cap. of Glynn co., Ga., on St. Simon's Sound, 8. m. from the ocean, 80 m. s.s.w. of Savannah. It has a safe and commodious harbor with a light-house at the entrance; and two leading railroads connect it with all important trading centres of the state: the Brunswick and Albany railroad extending westward intersects other important lines at Way Cross and at Albany; while the Macon and Brunswick railroad, 186 m. long, connects it with the northwest. A line of packets and a weekly steamer connects it with New York, and a daily steamer with Fernandina, Fla. The Savannah and Jacksonville steamers also stop here. B. has various manufactures; and exports much pine lumber and cotton. Pop. (1870) 2,348; (1880) 2,891; (1890) 8,459; (1900) 9,081.

BRUNSWICK: town in Cumberland co., Me., on the w. bank of the Androscoggin river, at the head of navigation, 9 m. w. of Bath, 29 m. n.e. of Portland; at the junct-

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tion of the Maine Central, the Bath, and the Androscoggin railroads. A bridge crosses the river to Topsham. The river affords abundant water-power. It is the seat of Bowdoin College (q.v.) and of its branch, the Maine Medical College. It has four banks, a weekly newspaper, a number of churches, and various manufactures. Lumbering and ship-building are the chief industries. Pop. (1870) 1,449; (1880) 2,410; (1890) 6,012; (1900) 6,806.

BRUNSWICK: capital of the duchy of B.; on the Oker, in a level and fertile district; lat. $52^{\circ} 46'$ n., long. $10^{\circ} 4'$ e. B., which is a very old place, is supposed to have been first walled about the 9th c., by Bruno, Duke of Ostfalen. But Henry the Lion, 12th c., so greatly beautified and extended the city that he may almost be said to be its founder. In the 13th c., B. became a member of the Hanse League, and soon attained considerable commercial prosperity, but it declined with the decay of the League. The town is most irregularly built, with narrow and crooked streets, but has good causeways and abundant supply of water. The cathedral—in which are some interesting relics brought by Henry the Lion from the Holy Land—with the churches of St. Martin, St. Catharine, and St. Andrew, with its steeple 316 ft. high, are among the principal buildings. In the museum are some interesting antiquities and works of art by Jan Steens, Albert Dürer, Holbein, Rembrandt, Raphael, Guido, Ruysdael, Michael Angelo, and Benvenuto Cellini. The industry of B. consists chiefly in manufactures of woolen and linen, chickory, beet-sugar, tobacco, *papier-mâché*, lackered wares, etc. Its great annual fair, founded 1498, is important. The old fortifications of B. have been demolished, and their site converted into pleasant promenades. A fine avenue of linden-trees leads to the duke's palace, an imposing edifice, built 1869. Pop. (1900) 128,226.

BRUNSWICK, *brünz'wîk*, DUCHY OF (Ger. *Braunschweig*): a state of n. Germany, consisting of three larger and five smaller distinct parts; mostly within lat. $51^{\circ} 38'$ — $52^{\circ} 28'$ n., and long. $9^{\circ} 23'$ — $11^{\circ} 30'$ e.; about 1,425 sq. m. For administrative purposes, B. is divided into six circles—viz., Brunswick, Wolfenbüttel, Helmstedt, Gandersheim, Holzminden, and Blankenburg. Of the three larger parts, the principal one, forming the circle of Wolfenbüttel, and including the capital, lies between Prussia and Hanover; the second, extending e. and w. from Prussia to the Weser, divides Hanover into two parts; and the third, forming the circle of Blankenburg, lies to the s.e. between Hanover, Anhalt, and Prussia. The smaller parts are the isolated bailiwicks of Calvörde in the e., Thedinghausen in the w. (not far from Bremen), and some very small demesnes in the Hanoverian boundaries. B. belongs mostly to the basin of the Weser, which river serves as a boundary on the w. The surface is mostly mountainous, particularly in the s. portions of the country, but B. has nevertheless level tracts of considerable extent. The rivers, with the exception of the Weser, are comparatively unimportant, though

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advantage is taken of one or two for the transport of timber. The climate in the lowlands resembles the general climate of n. Germany; but in the Harz district it is so much colder, that harvest is generally a month later than in the plains.

The mines and quarries of B. produce marble, alabaster, limestone, gypsum, alum, iron, copper, lead, sulphur, and salt in large quantities, with some gold and silver. Agriculture, carried on with intelligence and energy, constitutes the chief wealth of the duchy. The products include, beside the ordinary cereals, large quantities of leguminous plants, potatoes, tobacco, and hops. The pasture land is extensive, and great attention is paid to the rearing of cattle, and especially to the breeding of sheep, wool being an important article of commerce. A large number of persons are employed in the cutting and preparation of timber. The chief manufactures of B. are of linen, stockings, woolen cloth, metals, porcelain, paper, sugar, glass, beer, etc.

The annual revenue of Brunswick, 1896, was abt. \$3,297,500, and the expenditure \$3,542,750. The civil list of the duke is not comprised in the budget, being paid out of the revenues of the state domains and other funds—about \$250,000 a year. The Duke of B. has also very large private estates, and is one of the wealthiest of German sovereigns. At the death of the childless Duke Wilhelm, 1884, the succession passed to the Duke of Cumberland, son of George V., dethroned King of Hanover. As the heir declined to recognize the new constitution of the German empire, the imperial government declined to allow the succession to take place, and an interregnum occurred.

B. was included, as a part of Saxony, under the empire of Charlemagne. In 1235, B., with Lüneburg, was made a duchy under Otto, who died, 1252, and was succeeded, 1267, by his son, Albrecht, founder of the older line of Wolfenbüttel. John, another son of Otto, was the founder of the older Lüneburg line, which became extinct with William of Lüneburg 1369. In 1569, Henry, who styled himself Duke of Brunswick-Lüneburg-Dannenberg, founded the new House of Brunswick-Wolfenbüttel; and his brother William founded the new line of Brunswick-Lüneburg, which, 1815, became the kingdom of Hanover: see HANOVER.

The government is a limited monarchy, the duke's power being restricted by the legislature, which is partly hereditary and partly elective. The inhabitants are mostly Saxons, and, with the exceptions of about 3,000 Reformed, 15,000 Rom. Catholics, and 1,500 Jews, all adhere to the Lutheran Church. The people in the rural districts speak a very broad Low-German dialect; but good High-German is spoken by the educated classes. Pop. (1900) 464,333.

BRUNSWICK, NEW: see NEW BRUNSWICK.

BRUNSWICK BAY: on the n. w. coast of Australia; long. 125° e., and about lat. 15° s. It receives Prince Regent river.

BRUNSWICK BLACK—BRUSSELS.

BRUNSWICK BLACK: varnish for coarsely-finished iron grates, fenders, etc. It is compounded mainly of lampblack and turpentine, and when applied with a brush, quickly dries, and leaves a shining, jet-black surface.

BRUNSWICK GREEN: pigment used in the arts, and consisting of the hydrated chloride and oxide of copper ($\text{CuCl}, 3\text{CuO}, 4\text{H}_2\text{O}$). It may be prepared (1) by acting upon metallic copper with common salt and diluted sulphuric acid, (2) by acting upon metallic copper with moistened salammoniac, or (3) by mixing sulphate of copper and common salt into a paste with water. It is found native at Atacama, in Peru, in the form of a green sand, hence the name *Atacamite* (q.v.).

BRUNT, n. *brünt* [OE. *brunt*, a blow: Scot. *brunt*, burned: Icel. *bruna*, to advance with the speed of fire—from *bruni*, burning, heat: F. *broncher*, to strike the foot against]: the first shock of an onset; the greatest fury or heat of the battle; the force of a blow.

BRUSA, or **BURSA**: see **BROUSSA**.

BRUSH, n. *brūsh* [F. *brosse*, in *OF.*, signifying heather, scrub: mid. L. *bruscū*, brushwood (see **BRUSH 2**): land thickly covered, chiefly with low-growing bushes; copse; thicket. **BRUSH'WOOD**, n. a lot of small trees or bushes growing closely together; a coppice or thicket; the lopped branches of trees that have been cut down.

BRUSH, n. *brūsh* [Ger. and Sw. *borste*, a bristle, a brush: F. *brosse*, a bush, a head-brush—from mid. L. *bruscū*, thorn-bush, heather: It. *brusca*, heath for brushes: Icel. *bruskr*, a tuft of grass—*lit.*, a bunch of heather]: an article made of hair, bristle, etc., set in wood, for cleaning, as dust from clothes, or for painting; a skirmish; a slight encounter; the tail of a fox: V. to rub or sweep as with a brush; to touch or strike lightly. **BRUSHING**, imp. **BRUSHED**, pp. *brūsh't*. **BRUSH'ER**, n. one who. **BRUSH'Y**, a. -*ī*, rough; shaggy. **BRUSH'INESS**, n. shagginess. **BRUSH-WHEELS**, wheels without teeth, which move others by friction. **BRUSHED BY ME**, nearly or just touched me as he passed. **TO BRUSH UP**, to revive or restore. *Note.*—Both preceding entries are closely connected in meanings, and are identical in etymologies.

BRUSH TURKEY, or **MEGAPODE**: see **JUNGLE FOWL**, of Australia.

BRUSK, or **BRUSQUE**, a. *brūsk* [F. *brusque*, sharp, short,—from It. *brusco*, harsh]: rude; rough or blunt in manners. **BRUSQUE'NESS**, a blunt, rough manner. **BRUSQUERIE**, n. *brūs kī-rī* or *brūsk' rī*. **BRUSQUERIES**, plu. *brūs kī-rīz* [F.]: bluntness; abruptness; gruffness; roughness. **BRUSQUELY**, ad. *brūsk lī*, in a rough and blunt manner.

BRUSSELS, *brūs'séls* (Fr. *Bruxelles*): capital of Belgium; on the small river Senne, tributary of the Dyle; lat. 50° 51' n., long. 4° 21' e. It communicates with Antwerp and the Baltic sea, by means of the Scheldt canal, and railways connect it with Germany, France, and Holland, as well as with all principal towns of Belgium. The city

BRUSSELS.

is built partly on the side of a hill, partly on a fertile plain; and though some of the streets are so steep that they can be ascended only by means of stairs, B., on the whole, may be pronounced one of the finest cities in Europe. The upper town, on the side of the hill, is the newest and most fashionable, and is the residence chiefly of the great and wealthy. The king's palace, public offices, chief hotels, and mansions of foreign ministers are here. It is also much more healthful than the lower town, which, stretching along the canal and the Senne, is greatly subject to fogs. But the old town, with its numerous handsome old buildings, formerly belonging to the Brabant nobility, now occupied by merchants and traders, has a fine picturesque appearance, while some of its public edifices are unrivalled as specimens of Gothic architecture. This part has also several noble churches, but it is now wholly given over to trade. French is spoken in the upper part of B.; but in the lower, Flemish is prevalent, and in one quarter the Walloon dialect is spoken. The English language, owing to the large number of English who reside in B. for economy, also is very common. The walls which formerly surrounded B. have been removed, and their place is now occupied by pleasant boulevards, shaded by alleys of trees, extending several miles. The *Allée Verte*—a double avenue along the Scheldt canal—forms a splendid promenade, and leads toward the palace of *Laeken*, the suburban residence of the royal family, three m. n. of the city. Beside the fine park in the upper town, covering an area of some 17 acres, ornamented with fountains and statues, and surrounded by the king's palace, and other palaces and buildings (the chamber of representatives here was destroyed by fire 1883), B. has several other squares or places, among which the most noteworthy are: the *Place Royale*, with its colossal monument of Godfrey of Bouillon; the *Grand Place*, in which is the Hôtel de Ville, a splendid Gothic structure, erected in the beginning of the 15th c., with a pyramidal tower 364 ft. high, surmounted by a statue of St. Michael, the patron saint of B., and where, in 1568, the patriot counts, Egmont and Horn, were beheaded by order of the Duke of Alba; and the *Place des Martyrs*, where a memorial has been erected to those who fell here in the revolution of 1830. Among the churches of B. the largest and finest is the cathedral of St. Gudule, which dates from the 12th c., in the pointed Gothic style, with two towers of more modern date, rising on each side to a height of 264 ft., many richly-painted windows, a pulpit considered the masterpiece of Verbruggen, and monuments of the dukes of Brabant and other distinguished persons. In the *Palais des Beaux Arts* is the picture-gallery, containing the finest specimens of the Flemish school of painting; the public library, with its 234,000 vols., and its 20,000 MSS., collected by the dukes of Burgundy—MSS. interesting and valuable not only for their contents, but for the beautiful miniature paintings with which the scholars of Van Eyck adorned them. The observatory is well equipped. The

BRUSSELS CARPETS.

new *Palais de Justice* is one of the most magnificent buildings in Europe. The university, founded 1834, has four faculties—law, medicine, mathematical, and physical sciences, and belles-lettres, and a special school of pharmacy attached. B. has also numerous charitable and benevolent institutions; and is the seat of the provincial government of S. Brabant, as well as of the general government of the kingdom. B. is one of the chief centres of the industry of the country. Its lace is particularly famous. Of the esteemed carpets which pass under the name of B. carpets, only a few are manufactured here, most of those of Belgic make being produced at Tournai. It has manufactures also of damask, linen, ribbons, paper, jewelry, hats, soap, porcelain, mathematical and musical instruments, etc. Carriage-building is an important industry. Printing and lithographic establishments are numerous; and about a dozen newspapers, of which the *Indépendance Belge* has a European reputation, are published daily.

As early as the 8th c., B. (*Bruchsellā*), then probably a villa of the Frank kings, is mentioned in old chronicles, and that a church existed here in 966 is proved by a deed of the Emperor Otho I. Under Charles V., B. was made the court residence in the Netherlands, and became afterward, under Philip II., the chief arena of the Revolution, and of the atrocities committed by the Duke of Alba and the Inquisition. B. suffered greatly in the war of Spain against Louis XIV.—in whose reign it was bombarded by Marshal Villeroi and upward of 4,000 buildings destroyed—and in that of Austria against Louis XV.; but still more from the continual prevalence of party animosities caused by the policy of Austria. Under the mild rule of Maria Theresa, B. flourished greatly, and in this time many of its best institutions and public buildings were founded. In 1789 occurred the Brabant revolution under Joseph II.; and scarcely had Austrian rule been re-established, after a brief independence, when B. fell into the hands of the French, 1792. After other changes of fortune, B., with the other parts of Belgium, was incorporated with the kingdom of the Netherlands 1815, and so remained until the revolution of 1830, by which it became cap. of the independent kingdom of Belgium. Pop. with suburbs (1900) 561,782.

BRUSSELS CARPETS: very handsome and durable carpets, originally made at Brussels, but now chiefly at Kidderminster, England (see CARPETS). **BRUSSELS LACE**, exquisite and costly fabric made at Brussels. **BRUSSELS SPROUTS**, one of the many cultivated varieties of *Brassica oleracea* (see BRASSICA: CABBAGE), distinguished by producing, in the axils of the leaves, little clusters of leaves which close together and form miniature cabbages. These are used, like other greens of this species, for the table, and are very delicate in fibre and flavor. The plant is cultivated much in the same way as cabbage or kale, requiring, however, less space than most of the varieties. It may be planted in shady situations, or between the rows of crops, such as pease, beans, scarlet-

BRUTE—BRUTUS.

runners, etc., which are to be removed from the ground in autumn. The sprouts are fit for use chiefly in winter and spring. The stem sometimes attains a height of four ft., and the head resembles a small imperfectly bolted savoy; but there is a sub-variety with shorter stems, preferable for many situations. In some places it is customary to remove the head early in winter, in order to promote the development of the lateral shoots in spring; but if the head is allowed to remain, the plant becomes taller, and new shoots are formed as the lower ones are removed. The seed is sown in February or March. For cultivation in Britain, where this vegetable is said to degenerate, seed is generally imported from Belgium. Its use has of late rapidly extended, and none of the many varieties of the species to which it belongs is better worth cultivation.

BRUTE, n. *brôt* [L. *brûtus*; It. *bruto*, stupid, irrational; F. *brut*, raw, rough]: a beast; any animal except man; a savage unfeeling man or woman: **ADJ.** irrational; rough; uncivilized. **BRUTA**, n. *brótă*, a name often used to designate the mammalian ord. *Edentata*. **BRU'TAL**, a. *-tăl*, pertaining to a brute; cruel; unfeeling. **BRU'TALLY**, ad. *-lî*. **BRUTAL'ITY**, n. *.tăl'î-tî*, inhumanity; savageness. **BRU'TALIZE**, v. *-liz*, to make brutal or inhuman; to make like a beast. **BRU'TALIZING**, imp. **BRU'TALIZED**, pp. *-lîzđ*. **BRU'TIFY**, v. *-tî-fî*, to reduce to the state of a brute. **BRU'TIFYING**, imp. **BRU'TIFIED**, pp. *-fîđ*: **ADJ.** reduced to the condition of a brute. **BRU'TISH**, a. *-tîsh*, like a brute or beast; ferocious. **BRU'TISHLY**, ad. *-lî*. **BRU'TISHNESS**, n. the quality of being brutish; savageness.—**SYN.** of 'brutish': brutal; barbarous; inhuman; cruel; savage; ferocious; unfeeling; gross; carnal; bestial; sensual; ignorant; insensible; stupid.

BRUTTIUM: ancient province of s. Italy, occupying the long peninsula which forms the present Calabria. It was bounded on the n. by Lucania, and on the s. by the Strait of Messina. That country, bearing large forests of firs, traversed by the Apennines, and watered by the Laus and the Crathis (now Crati), produced wine, olives, and other fruits in abundance. Its chief cities were Cosentia, Rhegium, and Mamertum, whence came the Mamertines. The Brutians (*Brutti*) gained the ascendancy in the peninsula about the middle of B.C. 4th c. First subjugated by the Lucanians, they threw off that yoke; afterward they were conquered by the Romans, who divided them into *Transmontani* and *Cismontani*, according as they lived on this or the farther side of the Apennines, with respect to Rome. Having joined Hannibal when he invaded Italy, they were reduced to slavery by the Romans, who employed them specially as messengers between Rome and the provincial governors.

BRUTUS, *brótus*, **LUCIUS JUNIUS**: in the legendary history of early Rome, the hero who overturned the monarchical, and established the republican, form of government. The legend runs that he was the son of a rich Roman. On his father's death, Tarquin the Proud took possession of the property, and put an elder brother to death, and B. himself

BRUTUS—BRÜYS.

only escaped the same fate by feigning idiocy (hence the name *Brutus*, stupid). The oracle of Delphi foretold that he should govern in Rome. Remembering his own wrongs, and gifted with the strength and wisdom of one who was fulfilling the decrees of fate, B., when the foul rape committed by one of the royal family upon Lucretia had shocked the people, convoked them, placed himself at their head, and drove the kings from Rome. He is said to have been then elected one of the two first consuls (B.C. 509). That his character as a stern old Roman hero might be complete, the legend adds that he sacrificed to the new republic his own sons, detected in a conspiracy to restore the monarchy; and that at last he fell in mortal combat repelling an attack led on by one of the sons of Tarquin. Little more, however, is established on sufficient historical evidence with regard to B., than that there existed a person of that name who held high office in Rome at a very early period.

BRUTUS, MARCUS JUNIUS: B.C. 85-42: Roman conspirator. He appears to have spent the early years of manhood in exclusive devotion to literary pursuits, and not to have taken part in the political dissensions agitating Rome till he had attained mature age. When the civil war broke out between Pompey and Cæsar, he sided with the former; but after the battle of Pharsalia, made his submission to Cæsar, and, in the following year, was appointed gov. of Cisalpine Gaul. On returning to Rome, he divorced his wife, in order to marry Portia, the daughter of Cato, of whose principles in politics he professed to be a disciple. The influence of Cassius prevailed upon him to join the conspiracy which ended in the murder of Cæsar. The efforts of B. to retain popular favor afterward not availing to counteract the eloquence of Antony, he was forced to leave first Rome, and then Italy. The remainder of his life was spent partly in Athens, partly in Asia Minor, partly as the leader of a marauding force which maintained itself by plundering the inhabitants of the e. shores of the Adriatic. Defeated by Antony and Octavianus (Augustus) at Philippi, he ended his life by falling upon his sword.

BRÜX, brüks: town of Bohemia, on the Bila about 14 m. n. of Saatz. In its vicinity are extensive coal-mines, and the famous mineral springs of Püllna and Seidlitz, from which the inhabitants of B. prepare a considerable quantity of salts. Pop. (1881) 9,995.

BRUYÉRE, JEAN DE LA: see LABRUYÈRE.

BRUYS, PETER DE: see HENRICIANS.

BRYAN—BRYANT.

BRYAN, WILLIAM JENNINGS: b. Salem, Marion co., Ill., 1860, Mar. 19, the fourth of nine children. His early years were spent on a farm. He graduated from Illinois College in 1881 with high honors, and from Union Law College at Chicago in 1883. He began practice at Jacksonville, Ill., his college town. The following year he was married to Mary E. Baird, of Perry, Ill. His wife also was trained as a lawyer, and has been his constant adviser and helper in his political career. In 1887, he removed to Lincoln, Neb., where he became a member of the law firm of Talbot & Bryan. In 1888, May, he was present as a delegate at the dem. state convention at Omaha. During a lull in the proceedings he was prevailed on to make a speech in which he presented anti-protection views in a manner so forcible and fluent as to win the applause of the convention and to give him standing as a political orator. The following year he declined the democratic nomination for lieut. gov. of Neb., but was an active worker during the campaign. In 1890, he received the democratic nomination for congress. He worked energetically in the face of probable defeat by making a campaign against the McKinley tariff, and was elected by about 6,700 majority. His first term in congress was made notable by a speech on free wool delivered 1892, Mar. 12. In 1892, he ran for a second term. Omaha had been taken out of his district, and for this and other reasons his majority was reduced to 140. It was during this term that he developed a more ardent advocacy of free-silver coinage, supporting Richard P. Bland and antagonizing the Cleveland administration. He refused a renomination in 1894, and became editor of the *Omaha World-Herald* for a brief period. His crowning honors came in 1896, when he received the nomination of the democratic party in Chicago for the presidency of the United States, after an impassioned speech in which he declared for the free coinage of silver and told those who advocated the gold standard, 'You shall not crucify mankind upon a cross of gold.' The nomination was made on the fifth ballot, which stood 628 to 301 in his favor. His nomination was indorsed by the populists and the new free-silver party, and then followed one of the most hotly fought campaigns this country has ever witnessed. Mr. B. was defeated by a plurality of nearly 600,000 votes. In 1900 both he and Pres. McKinley were again nominated by their respective parties, and B. was again defeated, on a platform favoring free silver and opposing trusts and imperialism.

BRYANT, WILLIAM CULLEN: 1794, Nov. 3—1878, June 12; b. Cummington, Mass.: poet and journalist. At the age of 10, he published translations from some of the Latin poets; at 13, he wrote a terse and vigorous political poem, entitled *The Embargo*; and at 18, he composed his *Thanatopsis*, a poem full of beauty. He graduated at Williams College; was admitted to the bar 1815; but after a few years turned to literature. In 1825 he removed to New York, and in association with a friend, established *The New York Review*, to

BRYCE—BRYN MAWR.

which he contributed many of his best poems. In 1826 he became principal editor of *The Evening Post*, then the leading democratic paper of New York, which he conducted with a manliness and purity of tone that might be imitated by his professional brethren with great advantage to the character of the press. The first collected edition of his poems appeared 1832. They were soon republished in Britain, and were regarded as the highest efforts, up to that time, of the American Muse. In 1842 he published *The Fountain, and other Poems*. B. visited Europe 1834, and several times afterward, and records his observations in *Letters of a Traveller in Europe and America*. In 1858 appeared a new edition of his poetical works, and in 1869, a metrical translation of the *Iliad*, followed 1871 by that of the *Odyssey*. His *Orations and Addresses* appeared 1873; and, with Gay, he wrote a *Popular History of the United States* (4 vols. 1878-82). See Lives of him by Symington (Glasg. 1881); and by Parke Godwin (2 vols., New York, 1883), who has also edited his *Poetical and Prose Works* (4 vols. 1883-4).

BRYCE, *brīs*, JAMES, LL.D.: author: b. Belfast, 1838, May 10; son of James B., LL.D., of Glasgow. He was educated in the High School and Univ. of Glasgow, and in Trinity College, Oxford; obtained several univ. prizes; became a fellow of Oriel College, Oxford, 1862; barrister at Lincoln's Inn 1867; Regius prof. of civil law in Oxford Univ. 1870; member of parliament 1880, 85, 86; and under sec. of state for foreign affairs 1886; and received his degree from Edinburgh Univ. 1884 and Glasgow 1886. He has published *The Holy Roman Empire* (1864, 8th ed. 1884, Ger. tr. 1873, It. tr. 1886); *The Trade Marks Registration Acts, 1875 and 1876, with Introduction and Notes* (1877); *Transcaucasia and Ararat* (1877, 3rd ed. 1878); and *The American Commonwealth*, 3 vols. (1888). He is also author of numerous magazine articles on political, historical, geographical, and educational topics. His *American Commonwealth* was received with large interest in England and the United States.

BRYN MAWR: college for women, in a village of the same name on the main line of the Penn. railroad, 10 m. w. of Philadelphia. It was endowed in 1880 by Dr. Joseph W. Taylor, of N. J., for the advanced education of women. In 1884, James E. Rhoads was chosen pres. and M. Carey Thomas dean of the faculty. A year later its doors were thrown open to the students.

Three classes of students are admitted: graduates, undergraduates, and hearers. The hearers must be at least 25 years of age and must have passed a required examination for matriculation. For the undergraduates there is no division into the traditional four classes. The number of years required for graduation is not fixed, though the usual course is four years. Candidates for the degree Ph.D. must have spent three years in graduate work and from two to three years at this college.

Among provisions made for the partial support of

BRYOLOGY—BRYONY.

students are three public-school scholarships of \$100 each, nine of \$200 each, and three of \$400 each, open to graduates of local institutions. Three scholarships of \$300 each and three of \$200 each are awarded as the results of examinations. For the graduate department there are 11 fellowships of \$525 each, open to graduates of any college of good standing, and 5 of \$200 each to candidates next in merit. Three graduate fellowships of \$500 each are given for European study.

The college property consists of seven buildings valued at \$1,700,000. There are two halls exclusively for lecture purposes. The library is fitted for special study. It contains 36,100 vols., and \$3,000 is expended annually for additions. There is a fine gymnasium with running-track and swimming-bath. Gymnasium practice is required of all resident undergraduates. Athletic grounds and a skating-pond add to the opportunities for recreation. A cottage hospital is provided for the sick.

The college has productive endowment funds amounting to \$1,500,000. Annual receipts from benefactions reach \$24,000. The total income, including tuition and incidentals, is \$57,000. The necessary cost for a year to the student is placed at about \$400, of which \$100 is for tuition and \$275 for living expenses. The college had (1902) 44 professors and instructors and 417 students. The total number of graduates since the organization of the college was 450, of whom 443 were living.

All matters of conduct and discipline are regulated by the Self-government Association, composed of all the students acting through an annually elected executive committee of eight students. The students issue an annual magazine known as *The Lantern*. They maintain the following organizations: Self-government Association, Graduate Club, Undergraduate Association, Athletic Association, Philosophical Club, W. C. T. U., Christian Union, Missionary Association, De Rebus Club, and Chess Club. The college is strictly non-sectarian. President, M. Carey Thomas, LL.D.

BRYOLOGY, n. *brī-ōl'ō-jī* [Gr. *bru'ōn*, moss; *logos*, discourse]: the study of mosses; same as 'muscology.'
BRYOLOGIST, n. *-ō-jīst*, one who.

BRYONY, n. *brī'ō-nī*, or **BRYONIA**, n. *brī-ō'nī-ă* [L. *bryonīā*—from Gr. *bruōnīā*—from Gr. *brūōn*, abounding—from *bruō*, I abound, from its abundance]: plants of different genera, common in hedges—the roots are powerfully acrid; the white bryony is *Bryonīā alba*, and the red bryony is *B. dioī'ca*, ord. *Cūcūr'bitācēæ*; the black bryony is *Tāmus commūnīs*, ord. *Dī'oscōrēā'cēæ*; the wild vine; the lady's seal. **BRYONIN**, n. *brī'ō-nīn*, a yellowish-brown bitter substance obtained from the root.

BRYONY, *brī-o-nī* (*Bryonia*): genus of plants of the nat. ord. *Cucurbitaceæ*, distinguished by triadelphous stamens, with distinct anthers, a trifid style, and a few-seeded fruit destitute of hard rind. The stems climb by means of lateral tendrils, the leaves are angular or 3-5-lobed, and

BRYOPHYLLUM.

the flowers campanulate, 5-partite, unisexual, and generally yellow. The COMMON BRYONY (*B. dioica*), the only British species, is frequent in hedge-rows in England. It has cordate palmate leaves, axillary bunches of flowers, and red berries about the size of a pea. It abounds in a fetid and acrid juice. The root is perennial, very large, white, and branched, has a repulsive smell, and is acrid, purgative, and emetic. *B. alba*, common in the middle parts of Europe, possesses similar properties. The root of both is applied topically to bruises, and was formerly much in use as a purgative. It is now again much employed in homeopathic practice. A decoction made of 1 lb. of the fresh root is said by Withering to be



Common Bryony.

'the best purge for horned cattle.' It contains a bitter extractive, called *Bryonine*, to which it seems to owe its properties. The young shoots of both species are, however, so free from acrid and dangerous qualities, that they may be used as pot-herbs.—The roots of other species of the genus are acrid and purgative; but it is said that the root of *B. Abyssinica*, when cooked, is eaten without danger.—BLACK BRYONY (*Tamus communis*) is a plant of a different nat. ord. (*Dioscoreaceæ*, q.v.). The genus is distinguished by an inferior ovary and succulent fruit. Black B. has long twining stems, cordate undivided leaves, greenish flowers, and red berries. Its roots are very large and fleshy, black externally. The berries are unwholesome, and the whole plant is acrid, the root so much so as to have been formerly employed for stimulating plasters. But the young suckers, in which the acrid principle is not much developed, are eaten in Greece as asparagus, after careful boiling with change of water, as are also those of *T. Cretica*. The plant is common in most parts of Europe, and is found in England, in hedges and thickets.

BRYOPHYLLUM [Gr. *bryon*, moss, and *phyllon*, a leaf]: genus of plants of the nat. ord. *Crassulaceæ* (q.v.). *B. ca.*

BRYOZOA—BUACHE.

lycinum, a succulent shrubby plant, native of the Moluccas, with quinate or almost pinnate leaves, oblong deeply crenulated leaflets, and panicles of large pendulous greenish-yellow flowers, is frequent in British hot-houses, interesting from its producing buds on the edges of the leaves more frequently than almost any other plant. These buds are capable of forming independent plants. This curious mode of propagation is found also in the Bog Orchis (*Malaxis paludosa*), a plant of a very different nat. ord. See BUD and LEAF.

BRYOZOA, n. *brī'ō-zō'ă* [Gr. *bru'ōn*, moss; *zōōn*, an animal]: a group of invertebrate animals, usually forming plant-like colonies, and having the appearance of branched mosses; a synonym of *Polyzoa* (see ZOOPHYTES). **BRY'OZO'AN**, a. pertaining to.

BRY'UM [Gr. *bryon*, moss]: genus of Mosses (q.v.) distinguished by a terminal fruit-stalk, a double *peristome* (see MOSSES)—the outer one of 16 teeth, the inner a membrane



Bryum Longicollum.

a, Sterile shoot, with leaves; *b*, fertile plant, showing the spore-case and its stalk; *c*, the spore-case or capsule, magnified; *d*, the calyptra, magnified; *e*, the top of the spore-case or capsule, showing the double peristome, magnified.

cut into 16 equal segments—and a dimidiate *calyptra*. The species are very numerous. They all are small, their stems short, and their leaves forming little rosettes, from the centre of which the fruit-stalk springs. They generally grow in dense patches, on wet rocks, wet earth, the bark of trees, etc., beautifully clothing them with bright green.

BRZESC LITEWSKI: see BREST-LITOVSK.

BRZEZAN, *bzhā'zan*: town of Galicia, on the Zlota-Lipa, about 54 m. s.e. of Lemberg. It has an old castle and a gymnasium, and manufactures of linen, sail-cloth and leather. Pop. (1880) 10,899; (1890) 11,221.

BUACHE, *bū'āk* or *bō'āsh*, or GARDEN ISLAND: island of Western Australia, near the mouth of Swan river; lat. 32° 10' s., long. 115° 40' e. Though measuring only 6 m. by 1, it is important as sheltering from the open ocean the deep and spacious anchorage of Cockburn Sound, which lies between it and the mainland of the colony.

BUANSUAH—BUBALUS.

BUANSUAH, *bó-ăn-só'a*: a kind of wild dog in India. Some writers have suggested that it is the original of all the domestic dogs.

BU'AZE: South African plant, of which the botanical characters and relations are not yet known, but which is likely to prove of importance on account of its fibre. Dr. Livingstone found it growing in large quantities in the Maravi country, n. of the Zambesi; but he could not procure any specimen in flower or fruit, and Dr. Hooker did not



Buaze.

recognize the specimens of branches and leaves. It is not cultivated, and the only use to which it is put by the natives is to afford threads for stringing beads; but Dr. Livingstone thinks its fibre stronger and finer than flax, and says that a firm thread of it feels like catgut in the hand, and would cut the fingers sooner than break.

BUBALUS, *bū'ba-lus*, or BU'BALIS, *-lis*, or BU'BALE, *-lē* (*Antelope Bubalus*): supposed the *Bubalus* of the ancients—though that name is now generally appropriated to the buffalo (q.v.)—a species of antelope, of that section of the genus which is characterized as *bovi*-form or ox-like. The Arabic name is Bekker-el-Wash, which signifies wild ox. It is an animal about the size of a large stag, with very ox-like head and muzzle—the head, however, remarkably long; the horns about as long as the head, surrounded by a succession of thickened rings, curved so as somewhat to resemble the sides of a lyre, the points directed backward. The general color is yellowish-brown, but the tail is terminated by a black tuft. The B. is an animal of rather coarse appearance, destitute of the gracefulness of the typical antelopes. It inhabits Barbary, and occasional wanderers make their way to the banks of the Nile. It is figured on the monuments of ancient Egypt. It is gregarious in its habits. It is said to be easily domesticated.

BUBASTIS—BUBBLE.

The most nearly related species to this, of other antelopes known, is the KAAMA (q.v.) of south Africa.



Bubalis.

BUBASTIS, *bū-bās'tīs* (the *Pi-beseth* of Scripture, and modern *Tel Basta*): ruined city of Egypt, about 14 m. n. of Belbeys; lat. $30^{\circ} 36'$ n., long. $31^{\circ} 33'$ e. B. derived its name from the Egyptian goddess B., in whose honor a temple was erected here, which, perhaps not so large and magnificent as some Egyptian temples, was, according to Herodotus, one of the most beautiful; and vast numbers of persons were wont to make annual pilgrimages to it. Nothing but some stones of the temple, of the finest red granite, remain. There are some other ruins, and mounds of great extent, consisting chiefly of the remains of brick-houses and heaps of broken pottery.

BUBASTIS: goddess of the Egyptians; in their mythology, the child of Isis and Osiris, and sister of Horus. She was identified by the Greeks with Artemis (Diana), though upon what grounds is unknown, as the best information with regard to her is that she was the goddess who presided over pregnancy and childbirth. The chief temple erected to B. was at Bubastis (q.v.). B. is represented on monuments as having the head of a cat, an animal sacred to her.

BUBBLE, n. *būb'bl* [an imitative word: Dut. *bobbel*; Dan. *ðoble*; Sw. *bubbla*; It. *bubbola*, a bubble: Bohem. *bublati*, to murmur: Scot. *bub*, a blast of wind]: a round film or skin of a liquid full of air; anything empty; a false show; something not real and substantial: V. to rise up in air-bells, as on the top of a liquid; to run with a gentle gurgling noise; in *OE.*, to cheat or dupe. **BUBBLING** imp. *būb'bling*: **ADJ.** running with a gurgling sound: N. the gurgling soft rushing sound of flowing water. **BUB'LED**, pp. *-bled*. **BUB'BLY**, a. *-bli*, consisting of bubbles. **BUB'BLER**, n. in *OE.*, one who cheats or dupes. **A BUBBLE SCHEME**



Common **Bryony** (*Bryonia dioica*); *a*, Flowering and *b*, Fruiting branch



Buck of Fallow Deer.



Bubo,—Head of Virginian Horned Owl.



Buckbean (*Menyanthes trifoliata*): *a*, Fruit; *b*, a Flower.

BUBBLE—BUBO.

OR COMPANY, a scheme or enterprise got up entirely for the benefit of the promoters at the expense of the credulous public; a hollow or worthless scheme.

BUBBLE, in a legal aspect as defined by Blackstone: an unwarrantable undertaking by unlawful subscriptions, subjecting the parties who originate and put them in operation to the penalties of *premunire* (q.v.). The *South-sea Company* (q.v.) was a terrible example of such a B. The BUBBLE ACT is the name given to the 6 Geo. I. c. 18, 'enacted,' says Blackstone, 'in the year after the infamous South-sea project had beggared half the nation,' and which public fraud the act was intended to punish. But it was repealed by the 6 Geo. IV. c. 91, which at the same time left such companies to be dealt with by the common law.

BUB'BLE SHELL: see BULLA.

BUBO, n. *bū'bō*, plu. BUBOES, *bū'bōz* [mid. L. *bubo*, an ulcer—from Gr. *boubōn*, the groin: F. *bubon*]: a swelling of the lymphatic glands, especially those of the groin and armpit. BUBONOCELE, n. *bū-bōn'ō-sēl* [Gr. *kēlē*, a tumor]: a rupture in which the intestines break down into the groin; inguinal hernia. BUBONIC, a. *bū-bōn'ik*, pertaining to the scrofulous swellings of the inguinal and axillary glands, which are a general symptom of the malady.

BU'BO: see OWL.

BUBONIC PLAGUE—BUCCANEERS.

BUBONIC PLAGUE, a disease considered identical with the Black Death, having its origin in China, and first appearing in Europe in 543 A. D. at Constantinople. Its symptoms are the swelling of the lymphatic glands of the neck, armpits, groins, etc., which become very sensitive to the touch; headache, high fever, vomiting, great prostration; accompanied by appearance of purple spots and mottling of skin. Recovery is very slow; in extreme cases death ensues in 48 hrs. Now considered a germ disease, bacilli resembling those of chicken pox. Usually occurs in India, and attacks the half-starved masses in slums of cities; called "the poor's plague." Has visited some of the important Euro. cities. The plague is supposed to have existed in N. Afr. during 3d or 4th c. B. C., but was not brought to prominence till 542 A. D., when it appeared in Egypt, whence it extended to Constantinople the following year, causing the death of 10,000 people in one day. In 1352 it spread through Europe, causing the death of nearly one-fourth of its pop. During the "great plague" of London in 1665 there were 63,596 deaths out of a pop. of 460,000. The white races are more immune than any other. In 1899 two cases of the disease were brought into N. Y. harbor from Santos, Brazil, on the ss. *J. W. Taylor*. Cases occur occasionally in the Chinese quarters of San Francisco, but there as well as in Honolulu heroic measures are taken to prevent its spread.

BUBUKLE, n. *bū'būk-l* [see **BUBO** 1]: in *OE.*, a botch or imposthume; a red pimple.

BUCCAL, a. *bŭk'kāl* [*L. bucca*, the cheek]: belonging to the cheek; connected with the mouth.

BUCCANEERS, or **BUCCANIERS**, n. plu. *buk'ă-nērz'* [from the Carib language—*barbaco'a*, a kind of grate on which flesh was cooked for a feast; *boucan*, the place of such a feast: *F. boucaner*, to cook and smoke flesh at the same time]: persons who, in the W. Indies and S. Amer., hunted wild animals for their skins, and rudely preserved much of the flesh by drying it after the Indian fashion, called *bucaning*. **BUC'CANEE'RING**, n.-*nēr'ing*, the practice or profession of a buccaneer.

The term **B.** was applied to a celebrated association of piratical adventurers, who, from the commencement of the second quarter of the 16th c. to the end of the 17th, maintained themselves in the Caribbean seas, at first by systematic reprisals on the Spaniards, latterly by less justifiable and indiscriminate piracy. The name is derived from the Caribbee *boucan*. From this the French adventurers formed the verb *boucaner* and the noun *boucanier*, which was adopted by the English; while, strangely, the French used, in preference, the word *flibustier* (see **FILIBUSTERS**), a corruption of our 'freebooter.' The **B.** were also sometimes called 'Brethren of the Coast.' The arrogant assumption by the Spaniards of a divine right—sanctioned by the pope's bull—to the whole new world, was not, of course, to be tolerated by the enterprising mariners of England and France; and the enormous cruelties practiced

BUCCANEERS.

by the Spaniards on all foreign interlopers, of which the history of that time is full, naturally led to an association for mutual defense among the adventurers of all other nations, but particularly among the English and French, to which may be added the Dutch. The fundamental principles of their policy—for they, in course of time, formed distinct communities—were close mutual alliance, and mortal war with all that was Spanish. Their simple code of laws bound them to a common participation in the necessities of life; locks and bars were proscribed as an insult to the general honor; and every man had his comrade, who stood by him when alive, and succeeded to his property after his death. The principal centre of their wild and predatory life was for some time the island of Tortuga, near St. Domingo. When they were not hunting Spaniards, or being hunted themselves, their chief occupation and means of subsistence was the chase. From the flesh of wild cattle they made their 'boucan;' their skins and tallow they sold or bartered to Dutch and other traders. The history of these men embraces, as may be supposed narratives of cruelty and blood-shed unsurpassed in the annals of crime. It has, however, not a few stories of high and romantic adventure, of chivalrous valor, and brilliant generalship. Among the 'great captains' whose names figure most prominently in the records of buccaneering, were the Frenchman Montbars, surnamed by the terrible title of 'The Exterminator;' his countrymen, Peter of Dieppe, surnamed 'The Great'—as truly, perhaps, as many others so distinguished—and L'Olonnais, Michael de Busco, and Bartolomeo de Portuguez, Mansvelt, and Van Horn. Pre-eminent, however, among them all was the Welshman, Henry Morgan, who organized fleets and armies, took strong fortresses and rich cities, and displayed throughout the bold genius of a born commander. He it was that led the way for the B. to the Southern Ocean, by his daring march in 1670 across the Isthmus of Panama to the city of that name, which he took and plundered after a desperate battle. This brilliant but most unscrupulous personage was knighted by Charles II., and became deputy-gov. of Jamaica. A higher subordination of the love of gold to the passion for dominion in him, might probably have made him emperor of the West Indies, some dream of which seems at one time to have occupied his mind. In 1680 and 1689, extensive buccaneering expeditions were made to the Pacific, even as far as the coasts of China, of which the best record is preserved in the lively pages of William Dampier, himself an important partner in these bold adventures. The war between France and Britain, after the accession of William III., dissolved the ancient alliance of the French and English B. After the peace of Ryswick, and the accession of the Bourbon Philip V. to the Spanish crown (1701), they finally disappeared, to make way for a gang of mere cut-throats and vulgar desperadoes, not yet utterly extinct. The last great event in their history was the capture of Carthagena 1697, where the booty was enormous.—See Burney's *History of the B.*

BUCCARI—BUCCLEUCH.

(Lond. 1816); Thornbury's *Monarchs of the Main* (1855); and *Les Flibustiers au XVII. Siècle* (Limoges, 1884).

BUCCARI, *bók-ká'rē*, or BAKAR: free port of Austrian Croatia, on an inlet of the Gulf of Quarnero, 5 m. e.s.e. from Fiume. It is beautifully situated on the slope of a hill, and has a small but very good and safe harbor. The linen manufacture is carried on here, and ship-building is actively prosecuted; but the inhabitants are principally sailors and fishermen. The tunny fishery is the chief fishery of this part of the Adriatic. The vine is extensively cultivated in the neighborhood of B., and good wine is made. Pop. about 3,000.

BUCCINATOR, n. *bŭk'sī-nā'tēr* [L. *buccina*, a kind of trumpet—from *bucca*, the cheek]: a muscle forming a large part of the cheek—so called from being used in blowing wind-instruments. BUCCINAL, a. *bŭk'sin-āl*, trumpet-like. BUCCINUM, n. *bŭk-sī'nŭm*, a genus of shell-fish, including the common whelk (q. v.).

BUCCINO, *bôt-chē'nō*: town of s. Italy, province of Salerno, pleasantly situated on the Botta, which at this point is crossed by an old Roman bridge; about 14 m. e. from Campagna. In its vicinity are quarries yielding fine marble. Pop. 7,000.

BUCCLEUCH, *bŭk-klō'*: family of the Scotts, Dukes of B.; one of the oldest and most distinguished in Scotland. The family traces its descent from Sir Richard le Scott, in the reign of Alexander III. (1249–85); but the ancestor who first becomes historically conspicuous is Sir Walter Scott of Branksholm and B., a brave and powerful chieftain on the border. B., which from this early period was destined to be associated with the family title, is a lonely estate in the vale of Rankleburn, at the head of Ettrick, Selkirkshire. The Sir Walter alluded to flourished in the reign of James V., and on some incidents in his life, his great namesake founded the *Lay of the Last Minstrel*. Sir Walter fought bravely at the battle of Pinkie, 1547, and was slain in an encounter with Sir Walter Kerr of Cessford in the streets of Edinburgh, 1552.

He was succeeded by his grandson, Sir Walter Scott of B., a knight 'wise, true, and modest,' who was succeeded by his only son, who bore the same name. This Sir Walter is celebrated for his military exploits on the border; one of which was the rescue of one of his attendants, Kinmont Willie, from the castle of Carlisle. (See *Minstrelsy of the Scottish Border*). For his services to the state, in which is to be reckoned his carrying away of large numbers of the border marauders to foreign wars, he was raised to the peerage, 1606, as Lord Scott of B. Dying 1611, he was succeeded by his only son, Walter, who, 1619, received an elevation in the peerage, as Lord Whitcheater and Eskdale, and Earl of B. Through his son Francis, the second earl, the family, by a grant, acquired the extensive domain of Liddesdale, formerly belonging to the House of Bothwell; also, by purchase, large territories in Eskdale; and in 1642, the barony of Dalkeith from the Morton family.

BUCENTAUR.

Francis left only two daughters, the eldest of whom dying without issue, the titles and estates went to her sister, Anne, who, 1663, was married to James, Duke of Monmouth (q.v.), illegitimate son of Charles II. The pair were created Duke and Duchess of B., Earl and Countess of Dalkeith, etc. After a marriage of 22 years, the unhappy duke, on a charge of rebellion, was tried and beheaded, 1685, the duchess, however, retaining her honors, title, and estates, as in her own right. The duke left a family of four sons and two daughters. The duchess afterward married Lord Cornwallis, by whom she had a son and two daughters, and died in 1732, at Dalkeith House, where she had occasionally resided in princely splendor. James, her eldest surviving son, died previous to his mother, and his son, Francis, by the death of his grandmother, succeeded to the title of Duke of B. Notwithstanding the connection with the son of Charles II., the family still preserved the surname of Scott. Duke Francis, 1743, obtained a restoration of his grandfather Monmouth's Earldom of Doncaster and Barony of Tynedale, and was hence a British peer. In 1720, he married a daughter of James, second Duke of Queensberry, and by this fortunate connection a portion of the Queensberry estates, with the dukedom, merged in the family of B. 1810.

Henry, third Duke of B., b. 1746, was the greatest and most estimable of his family. He had for his tutor and friend Dr. Adam Smith, and his beneficent talents were directed to the improvement of his extensive estates in the s. of Scotland, by the amelioration of the soil, the planting of trees, the making of roads, the improving of the breed of sheep, and the social elevation of his numerous tenantry.

His son Charles, duke from 1812-19, was succeeded by the fifth duke, his son, Walter Francis, 1806-84. The fifth duke, like his grandfather, was noted for the improvement of his estates, which in Scotland are in Mid-Lothian, Dumfriesshire, Roxburghshire, Selkirkshire, Peeblesshire, Lanarkshire, and stewartry of Kirkcudbright. The island of Inchkeith (q.v.) also belongs to the ducal possessions. The greatest public improvement ever executed in Scotland by an individual, at his own private cost, was carried out by the fifth Duke of B. at vast expense—the creation of the deep-water harbor and port of Granton, on the Firth of Forth, two m. from Edinburgh.

The fifth duke was succeeded by his eldest son: The Duke of B. holds also the titles of Duke of Queensberry, Marquis of Dumfriesshire, Earl of Drumlanrig, B., Sanguhar, Dalkeith, etc., in the peerage of Scotland; and Earl of Doncaster, etc., in that of England. The courtesy title of the duke's eldest son is Earl of Dalkeith. See W. Fraser's *Scotts of Buccleuch* (2 vols. 1879).

BUCENTAUR, n. *bū-sēn' taur* [Gr. *bous*, an ox; *kentau'ros*, a centaur]: in *myth.*, a monster, half man, half ox; [It. *bucentoro*]: the state barge of the Doge of Venice, celebrated in the annals of that state when it was a flourishing republic. The Italian name is *bucentoro* or *bucintoro*, of which the etymology has been much debated. But it

BUCEPHALUS—BUCER.

seems to be a word compounded on the analogy of *hippocentaur* [Greek *hippos* and *kentauros*], a name used of the Centaurs (q. v.) in the form in which they were ultimately depicted, half horse, half man. B. would thus be properly a figure half bull [Gr. *bous*], half man; such as may presumably have been represented on the state barge in some way. A bucentaur was known as early as the end of the 12th c.; and a vessel of the same name was burnt when the French took Venice more than six centuries afterward; but it is not certain whether this was the same vessel, maintained by being repeatedly patched up with new ribs and planking. The B. is described as having been a galley, about 100 ft. long by 21 in extreme breadth; on a lower deck were 32 banks or rows of oars, manned by 168 rowers; and on an upper deck was accommodation for the illustrious visitors who occasionally came on board. All the fittings were most gorgeous. Although propelled mainly by oars, there were 40 mariners employed in other ways to manage the galley. The B. was employed only once a year, when the Doge 'married the Adriatic.' A splendid water-procession was formed, with the Doge and the chief notables in the B., and other distinguished persons in gondolas and feluccas; and when the vessels arrived at the mouth of one of the channels opening into the Adriatic, the Doge dropped a ring into the water, using the words: 'We wed thee with this ring, in token of our true and perpetual sovereignty.' This singular ceremony, which took place on Ascension Day, arose out of an honor or privilege conferred by the pope on the Doge in 1177, consequent on a splendid victory gained by the Venetians over the Emperor Frederick Barbarossa.

BUCEPHALUS, *bū-sěf'a-lūs* [Gr., ox-head]: name of the favorite charger of Alexander the Great; probably also the name of a peculiar breed of horses in Thessaly. According to tradition, Alexander in his boyhood was the first to break in the steed B., and thus fulfilled the condition stated by an oracle as necessary for gaining the crown of Macedon.

The town BUCEPHALIA, on the river Hydaspes, India, was founded near the grave of Bucephalus, which died during Alexander's Indian expedition.

BUCER, *būt'sēr*, MARTIN: 1491-1551, Feb. 27; b. Schlettstadt, Alsace: one of the church reformers of the 16th c. His real name was *Kuhhorn* (cow-horn), but in accordance with the fashion of his time among scholars, he changed it into its Greek equivalent—Bucer being derived from *bous*, an ox, and *keras*, a horn. At the age of 14 he entered the order of Dominicans. At the suggestion of his superior he went to Heidelberg to study theology, giving attention, however, at the same time to the Greek and Hebrew languages. While young, he was appointed chaplain to the Elector of the Palatinate. An acquaintance with the works of Erasmus had already inclined B. toward Protestantism, and his views were confirmed by the

influence of Luther at the Heidelberg disputations, 1518. Following the example given by Luther at the Diet of Worms (1521), B. became one of the boldest and most decided of the German reformers. In 1523 he went to Strasburg, where he introduced the doctrines of the Reformation. In the disputes between Luther and Zwingli, he adopted a middle course, and endeavored to make reconciliation between them; but his view of the sacraments, which approached that of Zwingli, exposed him to Luther's harsh reprobation. At the Diet of Augsburg, where he conducted himself with great circumspection and moderation, he generally accorded with the Lutheran views, but, with other Strasburg theologians, declined to subscribe to the proposed confession of faith, and afterward drew up the *Confessio Tetrapolitana*. An agreement, however, was subsequently entered into between B. and the Lutherans, and as a disciple of Luther, he appeared at the religious conference of the Reformers held at Leipsic. In consequence of his refusal to sign the *Interim*—a temporary creed drawn up by order of the Emperor Charles V.—B. found his situation irksome in Germany, and therefore accepted the invitation of Abp. Cranmer (1549), and came to England to teach theology at Cambridge, and assist Paul Fagius and others in forwarding the Reformation. His modesty, blameless life, and great learning gained many friends in England; but his labors were soon interrupted by death. His remains were interred in a church at Cambridge with great solemnity; but during the reign of Mary, his bones, with those of Fagius, were taken from their graves, and burned in the market-place. His constant attempt to express himself in language agreeable both to Luther and Zwingli, induced in him at times an obscure, ambiguous, and elusive kind of thought, to which, perhaps, Bossuet refers when he stigmatizes B. as 'the great architect of subtleties.' B. was, of course, exposed to many censures and scandals by the contemporary Rom. Cath. theologians, whose fertile imaginations were assiduously employed in that direction during the reformation period; but by Protestant writers he has been highly commended and by some has been ranked above even Luther and Melancthon. His best work is a translation and exposition of the Psalms, which he published under the pseudonym Aretinus Felinus (Strasburg, 1529). Hubert intended to edit the whole of B.'s writings in ten volumes, but only one vol. appeared (Basel, 1577).

BU'CEROS: see HORNBILL.

BUCH, *böckh*, LEOPOLD VON: 1774, Apr. 26—1853, Mar. 4; b. Stolpe, Prussia: celebrated German theologian. He received instruction under Werner at the Mining Acad., Freiberg. He afterward travelled in pursuit of his favorite science, through all the states of Germany, Scandinavia as far as the North Cape, and several parts of Great Britain, France, and Italy, visiting the Canary Islands, 1815. His chief writings are: *Geological Observations during Travels in Germany and Italy* (1802–1809); a

BUCHAN—BUCHANAN.

Physical Description of the Canary Islands (1825); *Travels in Norway and Lapland* (1810); and essays *On the Jura in Germany* (1839); and *On the Mountain Systems of Russia* (1840); with several monographs on Ammonites (1832), and other fossils. He was also the author of an excellent geological chart of Germany and its neighboring states (42 sheets, 2d ed., Berlin, 1832). He died in Berlin. B. has been described as 'the only geologist who has attained an equal fame in the physical, descriptive, and natural history departments of his science. In all these, he was an originator and a discoverer.' His complete works are in course of publication (vols. i.-iv., 1867-85).

BUCHAN, *būch'an*: n.e. district of Aberdeenshire, Scotland, consisting of about a fourth of the county; between the Ythan and the Doveran. Its surface is undulating, the highest points being Mormond Hill in the n., 769 ft., and Dudwick Hill in the s., 572 ft. Portions of the coast are bold and precipitous, especially for a few miles e. of the Doveran mouth, where Troup Head is 366 ft. high; and s. of Peterhead, where the coasts rise from 70 to 200 ft. Among the rocks five miles s. of Peterhead are the famous Bullers of B., a huge vertical well in the granite margin of the sea, 50 ft. diameter and 100 ft. deep, into the bottom of which the sea rushes by a natural archway, and in storms, dashes up the sides with great violence. The e. parts of B. consist chiefly of granite and gneiss, and the w. of clay-slate and old red sandstone. The chief seats of population are Peterhead, Fraserburgh, Macduff, and Turriff. B. contains several so-called Druid circles, as well as the remains of the Abbey of Deer, and of several castles belonging to the Comyns, who held the earldom of B., but forfeited their title and property 1309. See Pratt's *History of B.* (Aber. 1859).

BUCHAN, *būk'an*, DAVID: 1780-1837 (or 9?): British arctic explorer. In 1810, he was commander of a schooner on the Newfoundland station and ascended the River of Exploits. He was commander of the Newfoundland station 1823, and in 1825, high-sheriff of the colony. In 1818, he made his first expedition in search of the north pole, reached 80° 34', where he encountered impassable barriers of ice; and drifted with the currents until his vessel was disabled. He succeeded, however, in returning to England, and reported important facts in regard to ocean currents and the variation of the needle. He undertook another voyage to the arctic seas, but never returned; and in 1839 the admiralty erased his name from the list of living captains.

BUCHANAN, *būk-ān'an*, GEORGE: 1506, Feb.—1582, Sep. 28; b. Killcarn, county of Stirling, Scotland: one of the most learned men of the 16th c., distinguished poet and historian. His parents were poor, and he was sent to the Univ. of Paris by his uncle, who died two years afterward, leaving B. without the means of prosecuting his studies. He returned home, served in one campaign against the English, and entered St. Andrews Univ. 1524,

where, in the following year, he took his degree of B.A. In 1526 he went to Paris and became a student in the Scots College there. He subsequently obtained a professorship in the college of St. Barbe, but returned to Scotland about 1537. During his residence on the continent, B. adopted the reformed faith. A satire entitled *Somnium*, exposing the Franciscans, brought upon him the wrath of the priests; and he had resolved upon seeking safety in his old college at Paris, when King James V. took him under his protection, and intrusted him with the education of one of his illegitimate sons. At the request of the king, B. wrote another and more pungent satire against the monks, entitled *Franciscanus*, increasing their anger, and rousing especially the bitter hatred of the powerful Cardinal Beaton, who, after a time procured B's arrest, and even went so far as to offer the king money for his life. Though to James was entirely due the publication of the offensive satire, he did not interfere to protect the poet, who, however, contrived to effect his escape to Paris. After spending some years at Bordeaux and Paris in teaching, he accompanied the learned Portuguese, Govea, to the Univ. of Coimbra, Portugal. After the death of Govea, B. was arrested as a heretic, and was for some time detained in a monastery, where he began his splendid Latin metrical version of the Psalms. In 1551, being restored to liberty, he went to England; but soon afterward went to Paris. About 1560, he returned to Scotland, where he made an open confession of Protestantism. His reputation as a scholar gained for him a good reception at the court of the young queen, Mary, whose classical tutor he became. But his religious and political principles attached him to the party of the Regent Moray, by whose influence he was appointed principal of St. Leonard's College, in St. Andrews Univ., 1566. In the following year, he was chosen moderator of the general assembly—a very high honor for a layman. The doings of Mary, which scandalized the Scottish public, disgusted her tutor also, and he accompanied the Regent Moray to England, in order to give evidence against her before the commissioners appointed by Elizabeth to inquire into her guilt. His *Detectio Mariæ Reginae*, laid before these functionaries, was industriously circulated by the English court. In 1570, B. was appointed tutor to the young king, James VI. (afterward James I.), who owed to him all the erudition of which in later life he was so vain. No considerations of the future position of his pupil were allowed to interfere with B.'s treatment of him, which was strict, if not even stern; and in dedicating his *De Jure Regni apud Scotos* to the young monarch 1579, he warned him against favorites with a freedom remarkable not only in a subservient but in any age. In 1570, B. was appointed director of chancery, which he soon resigned, and in the same year was made keeper of the privy seal, an office which he retained until within a short time of his death. The latter years of his life were devoted to the composition of his *History of Scotland* (pub. 1582). He died thirty days after its publication, and was buried in

Greyfriars churchyard, Edinburgh. As a scholar B. was unrivalled in his age, and he wrote Latin poetry 'with the purity and elegance of an ancient Roman.' He was alike humorous, sarcastic, and profound. His *History*, written in Latin, is remarkable for the richness, force, and perspicuity of its style, though it has been found fault with for the partiality of its narration of contemporary events; and two years after the author's death, it, as well as *De Jure Regni*, etc., was condemned by the Scottish parliament, and every person possessed of copies was ordered to surrender them within 40 days, in order that they might be purged of 'the offensive and extraordinary matters' they contained. Two collected editions of B.'s work have been published—one by Ruddiman 1715, 2 vols. folio; and another by Burman, Leyden, 2 vols. 4to, 1725. The translations that have yet appeared are far from doing justice to the original. See Life by David Irving (2d ed. 1817).

BUCHANAN, JAMES, fifteenth President of the United States: 1791, Apr. 23—1868, June 1; b. Mercersburg, Penn. He graduated at Dickinson College 1809, studied law, and began practice at Lancaster 1812. His early political affinities were with the 'federalists,' his first public address being made after the capture of Washington by the British in 1814, in which, although in common with his party he disapproved of the war, he yet urged the enlistment of volunteers for the defense of Baltimore, which was then seriously threatened, and was himself one of the first to enlist. After the conclusion of peace he delivered in 1815 a Fourth of July oration in which he characterized the war with Great Britain as 'glorious in the highest degree to the American character, but disgraceful in the extreme to the administration.' He was elected to the Pennsylvania legislature 1814, and again 1815, after which he applied himself to the practice of his profession, in which he soon rose to distinction. His intention at this time was to retire wholly from public life, but the death of his affianced bride in 1820 caused him to seek for a change for diversion of thought, and he accepted a nomination to congress, taking his seat 1821, Dec. He never married, but the orphan children of his sisters became to him as sons and daughters. He was elected to congress as a federalist, but in the disruption of parties which ensued after the election of Mr. Monroe as president, he affiliated with the party then known as 'republican,' subsequently as 'democratic republican,' ultimately as 'democratic.' In 1829 he was made chairman of the Judiciary Committee in the house of representatives. He remained a member of congress until 1831, March 3, being recognized as a leader of the democratic party in opposition to the administration of John Quincy Adams, and in support of that of Andrew Jackson.

At the close of the second year of Jackson's administration Mr. B. wished to retire to private life; but at the earnest desire of President Jackson he accepted the appointment of minister to Russia, arriving at St. Petersburg, 1832, June. He held this position until August of

the next year, when, after a short time in Paris and London, he returned to his home in Lancaster, devoting himself mainly to his private affairs, until 1834, Dec. when he was elected to the U. S. senate to fill a vacancy occasioned by the resignation of Mr. Wilkins, who had been appointed minister to Russia. He was, by successive re-election, a U. S. senator till 1845, when Mr. Polk, who was beginning his presidential term, offered him the position of secretary of state, which he held until 1849, when the opposition party, which had assumed the name of 'whig,' came into power. In 1853 the democrats again came into power, having elected Franklin Pierce as president, who urged Mr. B. to accept the appointment of minister to Great Britain, a position which he reluctantly accepted, and filled with marked ability till 1856.

Meanwhile the anti-slavery—or more properly the 'free soil'—movement had been gaining strength. The 'whig' party was dissolved; the southern whigs virtually going over to the democrats, while the northern whigs, uniting with the free-soil democrats, organized a new party, which assumed the name of 'republican.' The democratic national convention of 1856 nominated for president Mr. B., then minister to Great Britain. He received the electoral vote of all the slave-holding states (except the eight votes of Maryland, cast for Millard Fillmore), besides the 62 votes of California, Illinois, Indiana, New Jersey, and Pennsylvania—174 in all. Mr. Fremont, the republican candidate, received the 114 electoral votes of the remaining free states. Of the entire popular vote of the Union about 1,838,000 were cast for Buchanan, 1,341,000 for Fremont, 875,000 for Fillmore.

Mr. Buchanan had several years before placed himself upon record upon the great political question of the time. He had opposed the 'Wilmot Proviso' of 1846, by which slavery was to be excluded from all newly acquired territory; had advocated Henry Clay's 'Compromise Measures' of 1850; and had declared that, 'Two things are necessary to preserve the Union from danger: (1) Agitation in the North on the subject of Southern slavery must be rebuked and put down by a strong and enlightened public opinion; (2) The fugitive-slave law must be enforced in its spirit.' These views were in substance repeated and elaborated in his various presidential messages.

The virtual election, in 1860, Nov., of Mr. Lincoln to the presidency, was the signal for secession. Only a few months of Mr. Buchanan's term remained, and his policy was apparently mainly directed to two points: (1) To confine the area of secession, so that if there was to be a Southern Confederacy it might be confined to the cotton states: (2) To induce congress to prepare for a civil war, in case one should be precipitated. When commissioners were sent by the Southern Confederacy to negotiate for a separation, he refused to receive them in any other capacity than that of eminent private citizens, and as late as 1861, Jan. 8, he sent a special message to congress, urging the adoption of the 'Crittenden Compromise,' which provided in sub-

stance that the Missouri compromise-line of 36° 40' should be re-adopted, and that this question should be submitted to the people in the several states. The republican majority in congress refused to act in accordance with the recommendations of the president. Probably—and not without plausible reasons—they put little faith in his sincerity, and none at all in his firmness. At all events, between the president and congress nothing was done to provide for the emergency which hourly became more pressing. Immediately after the inauguration of Mr. Lincoln, Mr. B. returned to his home at Lancaster, where the remaining seven years of his life were passed. Here he lived in retirement, although, we are told by his biographer, 'he took a lively interest in public affairs, always supporting, with his influence, as a private citizen, the maintenance of the war for the restoration of the Union.' He died at Lancaster.

Beside his numerous speeches in congress, diplomatic dispatches, and presidential messages, Mr. B. published only his book, *Buchanan's Administration* (1866), in which he vindicated the course which he had pursued: *The Life of President Buchanan* has been written, in a highly eulogistic manner, by Mr. George Ticknor Curtis (2 vols. 1883).

BUCHANITES, *bûch'an-îts*: extraordinary sect of fanatics, which sprang up in the w. of Scotland 1783; now extinct. The founder of the sect was Mrs. or Lucky Buchan, b. in Banffshire, 1738, of humble parentage; maiden name, Elspeth Simpson. She early fell into habits of vice, but with her licentiousness were combined an excitability of supposed religious feeling and extreme Antinomian opinions. In 1782, being resident in Glasgow with her husband, a potter, who ultimately divorced her, she became acquainted with the Rev. Hugh White, minister of the relief congregation in Irvine, a weak, vain man, and coarse, declamatory preacher, who adopted her opinions, for which he was deposed by his presbytery, and who began with her to found a new sect in Irvine. Popular tumults arose, which led to her expulsion from the town 1784, May. Mr. White and his wife, with other devoted adherents, male and female, accompanied her, regarding her as a divinely commissioned person, and expecting her to lead them to the place where Christ was speedily to appear again on earth; afterward they built for themselves, at New Cample, near Thornhill, a house of one apartment, with a loft, in which they all dwelt, supported chiefly by the money of the more wealthy of their number. A few additional persons joined them. Dissensions arose among them; and some left the society. Their expected heaven was one of mere sensual delights; and it is now ascertained that they lived in unrestrained sexual intercourse—for they condemned marriage as unworthy of Christians—and that they systematically practiced infanticide. Yet no investigation was made by the authorities. Those that remained of them purchased a small property, on which

BUCHAN-NESS—BUCHEZ.

was built the first house of the village of Crockettford, where they finally became extinct, the last of them surviving till 1846, full of the strange delusions of his youth, and preserving in his house the bones of Lucky Buchan, which were buried with him in his grave. See *The Buchanites from First to Last*, by Joseph Train. (Edin. 1846).

BUCHAN-NESS, *buch-an-nēs'*: the easternmost promontory of Scotland, in the n.e. of Aberdeenshire, three m. s. of Peterhead, in lat. $57^{\circ} 28'$ n., and long. $1^{\circ} 46'$ w. A light-house, 130 ft. high, with a revolving light, has been erected here. It may be stated that the low rocks at Peterhead stretch a little further east than the Buchan-ness. In the sea off the B. lie the Buchan Deeps, a great trough 50 to 90 fathoms deep, and 25 m. broad, and stretching south nearly as far as the Bell-rock. Outside lie the Long Forties, a bank at the depth of 35–45 fathoms, and 10–20 miles broad.

BUCHAREST, or **BUKHAREST**, or **BUKHOREST**, *bū-ka-rĕst'*: the chief city of Wallachia, cap. of Rumania; in a rich and extensive plain on the Dumbovitza, a tributary of the Argish; lat. $44^{\circ} 26'$ n., long. $26^{\circ} 5'$ e. The town is for the most part meanly built, but the streets are now mostly paved and lighted with gas. There are some handsome hotels; and the churches are numerous and many-spired, giving to the place a picturesque appearance. The royal palace was rebuilt 1885; and the Rom. Cath. cathedral is a fine building of 1875–84. The number of cafés and gambling tables is excessive; and altogether B. has the unenviable reputation of being the most dissolute capital in Europe. The *corso*, or public promenade, is a miniature Hyde Park. B. is the entrepôt for the trade between Turkey and Austria, the chief articles of commerce being grain, wool, salt, honey, wax, building-timber, and cattle. It has some small manufactures of woolen cloths and carpets. B. has at various times suffered considerably at the hands of the Russians, and is notable as the place where, in 1812, a treaty was concluded between Turkey and Russia, by which the former ceded to the latter the province of Bessarabia and a portion of Moldavia; Russia waiving her claim to all other territories that she had conquered. This treaty also defined the Pruth as the boundary line between the two empires. During the Crimean campaign B. was successively occupied by Russians, Turks, and Austrians. Pop. (1899) 282,071.

BUCHEZ, *bū-shā'*, PHILIPPE BENJAMIN JOSEPH: 1796–1865, Aug. 12; b. Matagne la Petite, dept. of Ardennes: French physician, writer, and pres. of the national assembly in 1848. He studied medicine in Paris, 1815. He became involved in several plots against the Bourbons, was active in the conspiracy of the French Carbonari (q.v.), and supported the doctrines of St. Simon (q.v.); but after editing the communist journal, *Le Producteur*, he separated from his colleagues. During all his active career of underhand politics, he was prosecuting his learned studies, and 1825 published a *Précis Élémentaire d'Hygiène*, besides

editing the *Journal des Progrès des Sciences et Institutions Médicales*. After the revolution, 1830, B. established and conducted the journal *L'Européen*, the organ of Neo-Catholicism; and in concert with M. Roux Lavergne, began a republican history of the French revolution. All his writings are marked by original views and arguments for the belief in human progress. After the February revolution, 1848, B. was made pres. of the national assembly; but, by his want of energy during the disturbance of May 15, he incurred the censure of all parties. He died at Rhodéz, in Aveyron.

BUCHHOLZ, *böck'holtz*, REINHOLD: 1837-76; b. Frankfurt, Germany: zoologist and traveller. He studied natural science, and accompanied the second German arctic expedition, 1869-70. He was appointed prof. of zoology at Greifswald, 1872; made a voyage to the Cameroons Mountains, Fernando Po Island, and the Ogoway river, w. Africa, 1872-75. His accounts of his travels have been published.

BUCHU: see BUCKU.

BUCK, n. *būk* [AS. *bucca*; W. *buch*; F. *bouc*—probably from the tendency of the animal to but or strike with the forehead: Icel. *bukkr*, a he-goat: Gael. *boc*, a he-goat, a knock or a blow]. distinctively, applied to the male of the fallow deer (the female being *Roe*); but often also to the male of other species of deer, as of the ROEBUCK (q.v.), though not to that of the Red Deer (see DEER), the mature male of which is a STAG or a HART: it is applied also to the male of the goat, the rabbit, etc.; a fop; a dashing young fellow. BUCK'ING, n. the copulation of bucks and does. BUCK'ISH, a. foppish. BUCKSKIN, n. a kind of leather; a heavy woolen cloth. BUCK-BEAN [Dan. *bukke-blad*, goat-leaf]: a water-plant having leaves like a bean, also called marsh trefoil, and bog-bean; the *Menyanthes trifoliata*; ord. *Gentianæ*, used as a substitute for gentian. BUCK-SHOT [so named from their size and color]: the seeds of *Cannas*, round and black, of the ord. *Marantacæ* or *Cannacæ*; known also as *Indian shot*; a kind of leaden shot larger than swan-shot. About 160 or 170 of them weigh a pound. BUCK-TOOTH, a displaced and projecting front tooth, especially in a horse. *Note*.—Latham suggests that *buck*, a dandy, may be only a corrupt pronunciation of F. *beau*; we have, however, Icel. *bokki*, a dandy.

BUCK, n. *būk* [Gael. *bog*, moist, to steep or soak; *buac*, the dung used in bleaching: Bret. *bouk*, soft: Dan. *bög-aske*, the ashes of beech-wood]: lye or suds in which clothes are bleached or washed: V. to wash or steep clothes in lye. BUCK'ING, imp.: N. the act or process of washing clothes; in *mining*, crushing ore. BUCKED, pp. *būkt*. BUCK-BASKET, a basket employed to carry clothes in to the wash-house.

BUCKAU, *būk'ow*: town of Prussia, one of the suburbs of Magdeburg, about 1 m. s. of the city, on the w. side of the Elbe river. It has large machine shops, and varied manufactures. Pop (1880) 12,506; (1891) 16,049.

BUCKBEAN—BUCKHOUND.

BUCKBEAN, or **MARSH TREFOIL** (*Menyanthes trifoliata*): plant of the nat. ord. *Gentianeæ* (q.v.), the only known species of its genus; widely distributed in all the colder parts of the northern hemisphere. It is one of the most beautiful of plants. It grows in marshy places, its creeping root-stocks (or rhizomes) and densely-matted roots often rendering boggy ground firm. The leaves are ternate, like those of the trefoils or clovers, and are supported on long stalks. The flower-stalk bears a compound raceme of 10–20 white flowers, externally tipped with red. The calyx is 5-parted; the corolla funnel-shaped, with a spreading 5-lobed limb, shaggy on the inner surface, with thick fleshy hairs. The fruit is a one-celled, two-valved capsule. The leaves are destitute of smell, but very bitter. From them is prepared a valuable bitter extract long



Buckbean.

used in dyspepsia and disorders of the bowels, and formerly in intermittent fevers. An infusion is also sometimes used, and sometimes the dried and powdered leaves. The whole plant seems to possess the same bitter and tonic properties. It is sometimes used instead of hops

BUCKET, n. *bŭk'kĕt* [*F. baquet* a pail—from *bac*, a punt, a trough: prov. Ger. *buck*, a boat: Gael. *bucuid*, a bucket: Russ. *buk*, a washing-vessel]: a domestic vessel of various shapes for containing water, rubbish, or ashes; a pail used by sailors. **BUCKETFUL**, n. a quantity sufficient to fill a bucket. **BUCKETFULS**, n. plu. *Note*.—In such compounds, *bucketfuls* is the true plural; *buckets-ful* has a slightly different sense, and is simply the n. *bucket* qualified by the adj. *full*.

BUCKETEYE: see **HORSE CHESTNUT**.

BUCKET-SHOP (originally a liquor-shop whose customers took liquor away in small pails): office ostensibly for conducting a stock-exchange business; really for registering bets on the fluctuations of the stock-market.

BUCKETEYE: see **HORSE-CHESTNUT**.

BUCKHOUND: a hunting-dog formerly common in Britain, when buck-hunting was a most fashionable amusement, but of which few packs now exist. The B. resem-

bles a dwarf STAG-HOUND (q.v.), and possesses great strength and perseverance. Bucks are hunted often by other kinds of hounds.

BUCKIE, n. *būk'kī* [AS. *bugan*; Meso-Goth. *biugan*; Dan. *buigen*, to bow, to bend]: in *Scot.*, any spiral shell of a sea-snail. THRAWN or DEIL'S BUCKIE, one with an imperfection or twist in his character; one perverse or refractory; a devil's plaything.

BUCKINGHAM: old county town of Buckinghamshire, Eng., in the n. part of the shire; 61 m. n.w. of London, on the Ouse—which flows round the town, and has three bridges. Bobbin lace is the chief manufacture, but it is on the decline. B. is a place of considerable antiquity. Edward the Elder fortified it 978, and the Danes captured it 1010. The Earls of Buckingham built a castle here soon after the Norman conquest. Edward III. made it a staple for wool. Here Catharine of Aragon received the news of the battle of Flodden, and Charles I. had his headquarters in B. for a few days in 1644. Pop. (1881) 3,585; (1891) 3,703.

BUCKINGHAM, *būk'ing-am*, Duke of (GEORGE VILLIERS), favorite of James I. and Charles I. of England: 1592, Aug. 20—1628, Aug. 23; third son of Sir George Villiers. He was born at his father's seat of Brookesby, Leicestershire. Knighted 1616, Apr. and sworn a gentleman of the bedchamber 1617, Jan. 1, he became Master of the Horse and a Knight of the Garter. Created the same year Baron of Whaddon and Viscount Villiers, and in January following Earl of B., and sworn of the privy council, he was next made a marquis, and appointed Lord-admiral of England, Chief-justice in Eyre of parks and forests south of the Trent, Master of the King's Bench Office, High Steward of Westminster, and Constable of Windsor Castle. In 1620, he married the daughter of the Earl of Rutland, the richest heiress in the kingdom. In 1623, while negotiations were in progress with the Spanish court for a marriage between the Infanta and the Prince of Wales, afterward Charles I., B. persuaded the latter to go himself to Madrid and prosecute his suit in person. The ultimate failure of the negotiations has been ascribed to B's arrogance. In his absence he was created a duke, and on his return nominated Lord-Warden of the Cinque Ports, and Steward of the Manor of Hampton Court. By his advice, James declared war against Spain. On the accession of Charles I., 1625, B. maintained his ascendancy at court but after the ill-fated expedition against Cadiz, he became odious to the nation, and was saved from impeachment only by the king's dissolving parliament. The treaty for the marriage of Charles with the Princess Henrietta of France was concluded by him, but he was not allowed to return to Paris, in consequence of his audacity in lifting his eyes to the French queen. In 1627, with an armament of 100 sail and 7,000 soldiers, he appeared before Rochelle, then in possession of the Huguenots, who refused him admission within the harbor. His troops then made an ill-conducted descent on the neighboring Isle of Rhé, and re-

BUCKINGHAM.

turned to England beaten and disgraced. He soon undertook a second expedition to Rochelle, and proceeded to Portsmouth for embarkation, when he was assassinated by a discontented subaltern-officer, named Felton, in his 36th year.

BUCKINGHAM, 2d Duke of (GEORGE VILLIERS): brilliant but profligate nobleman: 1627, Jan. 30—1688, Apr. 16; b. Wallingford House, Westminster; son of the first duke. He studied at Cambridge. On the outbreak of the civil wars, he served in the royal army; his estates were confiscated by the parliament, and he took refuge on the continent. He attended Charles II. into Scotland, and after the battle of Worcester, 1651, went again into exile. Returning secretly into England he married, 1657, the daughter of Lord Fairfax, the parliamentary general, to whom his forfeited estates had been assigned. Arrested by Cromwell and committed to the Tower, he was afterward removed to Windsor Castle, but released on the abdication of Richard Cromwell. At the restoration, he recovered his estates and was made master of the horse and sworn of the privy council. He was mainly instrumental in the fall of the chancellor, Clarendon, whom he made an object of ridicule to the king, and was one of Charles's confidential ministers, who, from the initial letters of their titles were called 'the Cabal.' Engaging, in 1666, in some treasonable practices for effecting a change in the government, he was deprived of all his offices at court, but, on his submission, soon recovered them. In 1670, he was sent ambassador to France, and was employed on other embassies. He was elected chancellor of the Univ. of Cambridge 1671. Supporting the nonconformists 1674, he opposed the test act, and was deeply engaged in the Popish plot. After Charles's death, 1685, B. retired to his manor of Helmsley, Yorkshire, and amused himself with the chase. He died at Kirkby-Moorside, and was interred in Westminster Abbey. The manufacture of glass and crystal is said to have been introduced into England from Venice by him. B. was the author of several stage-plays, of which the best is *The Rehearsal*, a comedy; *A Satire against Mankind*; and some poems.

BUCKINGHAM, JAMES SILK: traveller and lecturer: 1786–1855, June 30; b. Flushing, near Falmouth, Cornwall Eng.; son of a farmer. When a boy, he went to sea, and made several voyages to Lisbon. After years of unsettled and wandering life, he, 1816, established a journal at Calcutta, but the boldness of his censures on the Indian government led to his expulsion from the presidency of Bengal. His lectures, on his return to England, against the East India Company monopoly, and in support of opening the trade to China, directed public attention to the subject. In London, he established *The Oriental Herald*, and *The Athenæum*, now the leading weekly literary journal. Subsequently, he travelled through the United States, and 1832–37 was M. P. for Sheffield. He was projector and sec. of the British and Foreign Institute, literary club, 1843–46,

BUCKINGHAM—BUCKINGHAMSHIRE.

and pres. of the London Temperance League, 1851. B was the author of numerous works of travel on the continent, in the East, and in America. He was engaged on his autobiography, two vols. of which were published before his death.

BUCKINGHAM, *bŭk'ing-am*, JOSEPH TINKER: 1779-1861; b. Conn.; journalist; son of Nehemiah Tinker. At the age of 27 years, he obtained a authority from the legislature of Mass. to assume his mother's name, Buckingham. His father died 1783, leaving a widow and 10 children in destitution. B. learned the printer's trade; and edited *The New England Galaxy* (1817-28); *The Boston Courier* (1824-48); *The New England Magazine* (1832-36). He served also in the legislature; and published *Personal Memoirs and Recollections of Editorial Life* (1850, 2 vols.); and other works.

BUCKINGHAM, WILLIAM ALFRED, LL.D.: 1804-75; b. Lebanon, Conn.: statesman. He spent his boyhood on the farm; and received a common-school education. At the age of 21 years he started a prosperous business at Norwich, of which city he was mayor for four years. From 1858-66, he was gov. of Connecticut. He was enthusiastic and energetic in his efforts to save the Union, being largely instrumental in getting some 55,000 volunteers for the union army; so that without resorting to a draft, his state furnished 6,000 men more than her quota. He is known as one of the great 'war governors' of that critical time. He was U. S. senator from 1868 until his death. Senator B. made a gift of \$25,000 to the theological school of Yale College.

BUCKINGHAMSHIRE: a south-midland county of England; greatest length about 54 m., its average breadth 18; 738 sq. m. The plastic clay tertiary strata occupy the s. parts of the county, which is finely diversified with hill and dale, wood and water. To the north is a broad chalk-band, including the Chiltern range of chalk-hills, which enter from Oxfordshire, and stretch across the county n.e. into Bedfordshire, partly covered with heath and wood, and near Ivinghoe and Wendover, above 900 ft. high. Sloping n. from these hills, and crossed by narrower bands of greensand and oolite, is the extensive and very fertile vale of Aylesbury, watered by the Thame. The chief rivers are the Thames, bordering the county on the s.w., the Ouse, Ousel, Colne, and Thame, the latter two falling into the Thames. The Grand Junction canal, and the Great Western and Northwestern railways intersect the county on the e. and s. The climate of Bucks is mild and healthy; the soil is mostly good, chalk and clay predominating. About half the county is under tillage, the rest in meadows and pasture. The agriculture is not equal to the capabilities of the land, which is often overcropped and exhausted. The farms are generally small, averaging 200 acres. The cottages are generally good. Wheat and beans are the principal crops. The chief dairy product is butter, of which four to five millions of pounds are annually sold, chiefly in London. In the vale of Aylesbury, fattening of cattle is extensively carried on; the sheep are noted for their fine and heavy

BUCKLAND.

fleeces; and large numbers of ducks are reared for metropolitan consumption. Of the total area of 467,132 acres, 405,899 were cultivated in 1880, 50,391 being under wheat crops. Beech and oak are the chief timber-trees, but box and juniper are also grown. The chief manufactures are paper, straw-plait, and thread-lace. The county returns three members to parliament. Aylesbury, Buckingham, Marlow, and Wycombe ceased in 1885 to be parliamentary boroughs. B. contains some Roman and British remains, as traces of Watling, Ickneld, and Akemen streets or ways. The chief ecclesiastical ruins are those of Missenden and Notley Abbey, the latter of which has been converted into farm-buildings. There are many examples of early English and decorated architecture. The church of Chetwode, near Buckingham (13th c.), contains some very fine examples of ancient glass-staining. Many events of historical interest occurred in this county. It was the scene of contest in the civil wars of Stephen and John. At Chalfont St. Giles, Milton finished his *Paradise Lost*, and at Horton, he wrote *L'Allegro*. At Hampden lived the great patriot of that name; Atterbury was born at Milton; Stoke Poges churchyard suggested Gray's *Elegy*, and is the place of his burial; at Olney, Cowper lived; Beaconsfield Manor was the seat of Waller; Gregories, near Beaconsfield, of Edmund Burke; Bradenham, of the elder D'Israeli; and Hughenden, of the Earl of Beaconsfield; Scott, the biblical commentator, was rector of Aston Sandford; Herschel's great telescope was erected at Slough, where he made most of his important discoveries; and at Stowe is a magnificent mansion—one of the finest in England, alike for extent, architecture, and beauty of site Pop. (1881) 176,277; (1891) 185,190; (1901) 196,844.

BUCKLAND, FRANCIS TREVELYAN: 1826, Dec. 17—1880, Dec. 19; b. at Christ Church College, Oxford, Eng.; son of the Rev. Dr. William Buckland (q.v.). He was educated at Winchester School, and at Christ Church College, Oxford. He studied medicine, and after being house-surgeon of St. George's Hospital, London, was appointed asst. surgeon to the 2d Life-guards 1854, retiring 1863. From his boyhood, he had enthusiastic delight in natural history, especially when it could be applied practically to the cultivation of useful quadrupeds, birds, or fish, in which study he was encouraged and guided by his father. He contributed largely to the *Times*, *Field*, *Queen*, *Land and Water*, which he started with Mr. W. Pfennell, and of which he was editor, etc. He was also the author of *Curiosities of Natural History* (1857; 2d series, 1860; 3d series, 1866); *Fish-hatching* (1863); *Logbook of a Fisherman and Zoologist* (1876); *Natural History of British Fishes* (1881); and *Notes and Jottings from Animal Life* (1882); also editor of a new edition of his father's *Bridgewater Treatise* (1858); and of *White's Selborne* (1876). B. was first sec. of the Acclimatization Soc. He was an acute observer, and his writings on natural history in great part present in a sprightly and interesting style the results of fresh and original observations. His advice on fish-culture was sought by the governments of Russia, Germany, France, America, and the colonies. He also, at his own cost, estab-

lished under the Science and Art Dept., South Kensington, a 'Museum of Economic Fish-culture.' In 1867, B. was appointed inspector of salmon fisheries for England and Wales; in 1870, special commissioner on the salmon fisheries of Scotland; and in 1877, on the Scotch herring fisheries. He was not a follower of the Darwinian school of naturalists. See his Life, by G. C. Bompas (1885).

BUCKLAND, WILLIAM, D.D., Dean of Westminster 1784—1856, Aug. 14; b. Axminster, Devonshire, Eng.: distinguished geologist. Educated at Winchester and Oxford, he was appointed, 1813, reader in mineralogy in Oxford Univ. The same year, he was elected a fellow of the Geological Soc., and he was twice its president. In 1818, he became reader in geology at Oxford, and was elected fellow of the Royal Soc. In 1822, he received the Copley medal for an account of an assemblage of fossil teeth and bones of 22 different animals, discovered in a cave at Kirkdale, Yorkshire; and in 1823, he published a treatise founded on it, entitled *Reliquiæ Diluvianæ, or Observations on Organic Remains, attesting the Action of a Universal Deluge*, a theory which he afterward saw cause to modify. In 1825, B. was appointed a canon of Christ Church, Oxford. In 1827, he was chosen a member of the council of the Royal Soc.; in 1832, he was elected pres. of the British Assoc. at Oxford, its second meeting; and in 1836, he published his Bridgewater Treatise, *Geology and Mineralogy considered with Reference to Natural Theology* (2 vols. 8vo). To the Transactions of the Geological Soc. he contributed many valuable papers; and his sketch of the structure of the Alps, in the *Annals of Philosophy*, is esteemed one of the most interesting of his geological writings. In 1845, he was made Dean of Westminster, and in 1847 a trustee of the British Museum. Under his great and continuous labors, his mental faculties gave way some years before his death.

BUCKLANDIA, *bŭk-lăn'dĭ-a*: magnificent and beautiful evergreen tree of the nat. ord. *Hamamelidæ* (see WITCH-HAZEL): native of mountains. It grows unbranched to the height of 40 ft., the trunk sometimes 21 ft. in girth at 5 ft. from the ground. The foliage is thick, bright, and glossy. The timber is not valuable. Dr. Hooker thinks that this tree would probably thrive in the mild climate of the w. of England.

BUCKLE, n. *bŭk'kl* [F. *boucle*, a curl or buckle: OE. *bocle*, boss of a shield—from mid. L. *buc'ŭla*, a shield, as made of hide, originally, the *boss*—from L. *bucca*, the mouth: Ger. *buckel*, a boss or stud]: an article usually of metal, consisting of a rim and tongue, used for fastening together parts of dress; formerly a conspicuous ornamental fastener for the upper of a shoe; a curl: V. to fasten with a buckle; in OE., to bend or bow; to encounter. BUCK'LING, imp.: ADJ. curly; wavy. BUCK'LED, pp. *bŭk'kld*. TO BUCKLE TO, to engage in a matter with zeal. See BUCKLES.

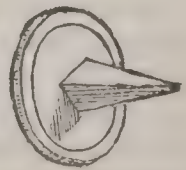
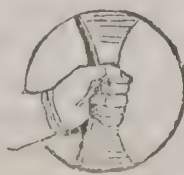
BUCKLE, *bŭk'kl*, HENRY THOMAS: 1821, Nov. 24—1862, May; b. Lee, Kent, Eng.: author. He was for a very short time at Dr. Holloway's school in Kentish-Town, near London. No other school and no university claims credit for

BUCKLER.

his education, which nevertheless was in a high degree liberal. An easy fortune, and a large library, enabled Mr. B. to gratify, without any impediment or restraint, an absorbing love of letters. He became suddenly notable, 1857, by the publication of the first vol. of his work, *History of Civilization in England*. After bringing out a second vol., 1861, he undertook a journey to the East, to restore his health and extend his knowledge. Having spent the winter in Egypt, he went over the desert to Syria, caught typhus fever by the way, and died at Damascus.

B.'s plan involved, before tracing the particular history of English civilization, a general consideration of the progress of those European countries, England, France, Germany, Scotland, Spain, and America, in which the elements of modern civilization are originally found. The two volumes published are occupied with this preliminary examination, which they do not complete. His objects, however, are clear. They are (1) to discover what is the essential spirit of a nation's history apart from particular men and events, and (2) to trace out the causes of the progress which has been made in England and France. Under the first head, B. endeavors to show that the spirit or character of a people is dependent on material circumstances, such as soil, climate, food, aspect of nature, and the like, and to be sought for in these; under the second head occurs the theory, the vigorous application of which by B. has startled and offended many readers—viz., that the progress of society depends upon skepticism; that the retarding force is credulity; and that the excessive 'protection' exercised by governments, the nobility, the church, etc., over the 'people,' has dwarfed and held back the spirit of freedom and civilization. These, and other positions, are defended by B. with great ingenuity and lucidity of argument and expression, and have been admitted, even by his opponents, to contain much truth. He is accused—perhaps not unjustly—of being often one-sided, and of drawing sweeping deductions from an imperfect survey of the facts. He is said to have been one of the best chess-players in the world. See his *Miscellaneous and Posthumous Works*, edited by Miss Helen Taylor; and the *Life and Writings of B.*, by A. H. Huth (1880).

BUCKLER, n. *bŭk'ler* [F. *bouclier*; OF. *boeler*, a shield with a central boss—from *boucle*; OF. *boele*, a shield's boss, a ring—(see BUCKLE)]: in old armor, a kind of shield buckled on the left arm. The bucklers worn by the *hastati*, or spearmen, among the ancient Romans, were about 4 ft. long, by 2½ in width, made of boards, covered on the inside with linen and sheep-skin, and on the outside with iron-plate. In the middle ages, the B. was round, oval, or square in shape, and was frequently made of wicker-work or of hide, strengthened by metal plates: V.



Bucklers.

BUCKLES—BUCKRAM.

to defend; to support. BUCK'LEERS, n. plu. *-éérz*, among sailors, blocks of wood for stopping up the hawse-holes when at sea.

BUCK'LES: metal instruments, consisting of a rim and tongue, used for fastening straps or bands in dress and harness. The use of B., instead of shoe-strings, was introduced into England during the reign of Charles II. They soon became very fashionable, attained an enormous size (the largest being called Artois buckles, after the Comte d'Artois, brother of the king of France), and were usually made of silver, set with diamonds, and other precious stones. In the last half of the eighteenth century 4,000 people were employed in making B. at Birmingham, turning out 2,500,000 pairs annually, at an average value of 2s. 6d. per pair. B. on shoes went out of fashion abt. 1790, but remained as part of court dress, being generally worn when a prince of the royal family is present. They are occasionally seen in private society.

BUCKLEY, JAMES MONROE, D.D., LL.D.: 1836, Dec. 16— ———; b. Rahway, N. J.: Meth. Episc. minister and author. He studied at Pennington Seminary, N. J., and at Wesleyan Univ., Conn.; took his theological course at Exeter, N. H. He was pastor in N. H. and in Detroit, Mich.; in 1866, became pastor of Summerfield Meth. Episc. Ch., Brooklyn, N. Y.; was afterward pastor at Stamford, Conn.; in 1878, became pastor of the Hanson Place Meth. Episc. Ch., Brooklyn. In 1881, he became editor of the *Christian Advocate*, New York, which important post he has since continuously held. He has been a member of every general conference since 1872. He is author of *An Appeal to Persons of Sense and Reflection to Begin a Christian Life*; *Christians and the Theatre*; and *Modern Miracles*.

BUCKMAST, n. *bŭk'măst* [Ger. *buche*; AS. *béce*, beech, and *mast*, which see]: seed of the beech; the beech itself.

BUCKMINSTER, *bŭk'mĭn-stēr*, JOSEPH, D.D.: 1751–1812; b. Rutland, Mass.: Unitarian minister. He graduated at Yale 1770, was tutor at the college, and became pastor of the North Church, Portsmouth, N. H., 1779.

His son, Joseph Stevens B.: 1784–1812: Unitarian minister; graduated at Harvard 1800; became pastor of Brattle Street Ch., Boston, 1804.

BUCKNER, SIMON BOLIVAR: 1823— ———; b. Ky.: confederate general. He graduated at West Point 1844; became prof. of ethics there 1846; and was asst. instructor of infantry tactics 1848–55. Afterward he practiced law. He joined the confederate army, and was in command of Fort Donelson at its surrender to Gen. Grant, 1862, Feb. 16. He was imprisoned at Boston, and after his exchange fought at Murfreesboro and Chickamauga. He was elected gov. of Ky. 1887; was nominated for vice-pres. 1896 by the sound-money Democrats, but defeated.

BUCKRA, n. *bŭk'ră* [in Calabar, a demon, a powerful being]: among the *blacks*, a white man: ADJ. white.

BUCKRAM, n. *bŭk'răm* [OF. *bougran* and *boucaran*, a

BUCKS—BUCKTHORN.

coarse open cloth—from *bouc*, a he-goat—from mid. L. *boqueranus*, a fine texture of cloth: It. *bucherame*, a coarse cloth]: *originally*, a stuff made of goat's hair; coarse linen cloth stiffened with glue: ADJ. stiff; precise.

BUCKS (Eng.): see BUCKINGHAMSHIRE.

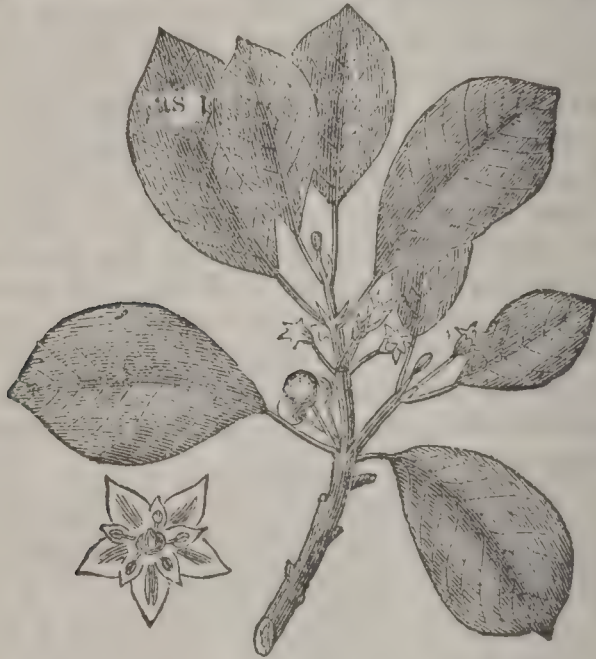
BUCKSKIN: a fanciful name for a heavy-made, strong-twilled woolen fabric, for trouserings—highly milled to about the usual width for such goods—27 inches; and cropped and finished, with the pile or nap so shorn as to show the texture through it. Buckskin (properly) is the name for a kind of leather.

BUCKSTONE, JOHN BALDWIN: 1802–1879, Oct. 31; b. in the suburbs of London: comedian and dramatic writer. He appeared first on the stage of a provincial town; then in London at the Surrey Theatre 1823, with such success that he was soon engaged at the Adelphi Theatre, where he continued many years as leading leg-comedian. He afterward played at the Haymarket and Drury Lane Theatres, of the former of which he was lessee from 1853–78. B.'s acting was noted for comicality and humor, which never degenerated into vulgarity, and for its distinct appreciation of individual traits. Of the 150 pieces which he is said to have written for the stage, the best known are: *The Green Bushes*, *The Flowers of the Forest*, *Luke the Laborer*, *The Wreck Ashore*, *The Rough Diamond*, *Good for Nothing*, *The Irish Lion*, and *The Alarming Sacrifice*.

BUCKTHORN, n. *bŭk'thawrn* [AS. *bucca*; Icel. *bukkr*; Dut. *bok*, a he-goat], (*Rhamnus*): genus of shrubs or small trees of the nat. ord. *Rhamnaceæ* (q.v.), distinguished by a bell-shaped 4–5-cleft calyx, which divides around the middle after flowering, the upper part falling away, and the base remaining and adhering to the fruit; which is globose, and sometimes succulent, sometimes rather dry or spongy, with 2–4 stones. The petals are sometimes lacking. Some of the species are diœcious, some hermaphrodite. They are numerous, and natives of most of the tropical and temperate regions of the world.—The COMMON BUCKTHORN (*R. catharticus*) is a deciduous shrub or low tree, frequent in England and in other parts of Europe and the north of Asia. The leaves are ovate, crenate, and bright green; the branches spiny; the flowers small, yellowish-green, and densely clustered; male and female flowers on separate plants; the berries about the size of peas, globular, bluish-black, nauseous, and violently purgative. They were formerly much used in medicine, but now more rarely, and only in the form of a syrup prepared from their juice. They supply the *Sap Green* (q.v.) or Bladder Green of painters. The bark affords a beautiful yellow dye. The B. is sometimes planted for hedges, but is of too straggling a habit.—The ALDER BUCKTHORN, or BERRY-BEARING ALDER (*R. frangula*), is frequent in woods and thickets throughout Europe. It is a shrub, rarely a small tree, with spineless branches oval entire leaves, and small, whitish, axillary, flowers, which are in general somewhat clustered. The bark of the twigs is gray, and has a disgusting smell and a

BUCKU.

nauseous bitter taste. It was formerly used in medicine, with that of the last species, and has recently been recommended in many quarters as a remedy for intermittent fevers. It contains principally an acrid bitter extractive, a volatile oil containing hydrocyanic acid, and a yellow coloring matter called *Rhamnin*. The berries are small and black, and violently purgative. It is objected to their use in medicine that much sickness and thirst attend it. The charcoal of the wood is light, and is used for the preparation of gunpowder. The bark, leaves, and berries are used for dyeing; the bark for dyeing yellow, and with preparations of iron, black; the unripe berries to dye wool green and yellow; the ripe berries to dye it blu-



Alder Buckthorn (*Rhamnus frangula*).

ish-gray, blue, and green. The flowers are peculiarly grateful to bees.—DYER'S BUCKTHORN (*R. infectorius*) is a low shrub, abundant in the s. of Europe, whose unripe fruit yields a brilliant yellow dye. The berries and inner bark of *R. tinctorius*, native of Hungary, also are used in dyeing; and the berries of *R. saxatilis*, a procumbent shrub, growing among rocks as far n. as Switzerland. The *French Berries*, *Avignon Berries*, or *Yellow Berries* of dyers, are the fruit of *R. infectorius*, *R. saxatilis*, *R. amygdalina* (or *oleoides*) and *R. Clusii*.—The SEA BUCKTHORN is a shrub of a different genus and order. See SALLOW-THORN.

BUCKU, *bū'kâ*: name common to several small shrubs of the genus *Barosma* (formerly included in *Diosma*), natives of the Cape of Good Hope, the leaves of which are used in medicine—sometimes in the form of a powder, more generally of an infusion or a tincture—particularly on account of their powerful operation on the urinary organs, as in chronic inflammation of the bladder, urinary calculus, etc. They are used also in dyspepsia, rheumatism, and dropsy; and are stimulant and antispasmodic, diuretic, diaphoretic, and tonic. They appear in commerce usually mixed with stalks and fruit. They are smooth, leathery, and shining, more or less crenated or serrated, and much covered with

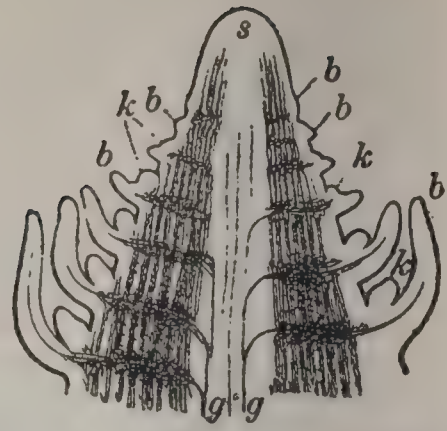
BUCKWHEAT.

pellucid dots, which are glands filled with a strongly-smelling yellowish volatile oil. The strong odor of B. leaves is generally regarded as disagreeable, but the Hottentots perfume themselves with them. They have a warm taste, resembling that of mint. The genus *Barosma* belongs to the nat. ord. *Rutaceæ*, and is distinguished by regular flowers with five petals, five fertile, and five abortive scale-like stamens, anthers bearing a minute terminal gland, and a five-lobed ovary. The species principally yielding the B. leaves of the shops are *B. serratifolia*, *B. crenata*, *B. crenulata*, and *B. venusta*. Also spelled BUCHU.

BUCKWHEAT, n. *buk'whēt* [Dan. *bog-hvete*; Dut. *boekweit*; Ger. *buchweizen*—lit., *beech-wheat*, and so named from the resemblance of its seeds to *beech-mast*: Ger. *buche*; Dan. *bog*, *beech-mast*], (*Fagopyrum*): genus of plants of the nat. ord. *Polygonæ* (q.v.), or according to many botanists, a subgenus of *Polygonum*, distinguished by the central embryo, and by racemes of flowers grouped in panicles. COMMON B. (*Fagopyrum esculentum*, or *Polygonum Fagopyrum*) is a native of the basin of the Volga, the shores of the Caspian Sea, and many parts of central Asia, from which it is said to have been introduced by the Moors into Spain, and thence to have extended over Europe, in many parts of which places it is now naturalized. Another account represents it as brought to Europe by the Crusaders. In France it is called *Blé Sarrasin*, or Saracen wheat. It is cultivated on account of the farinaceous albumen of its seeds, which are used, as grain, for food of man and cattle. It is upright, branched 1-3 ft. in height; the leaves are between heart-shaped and arrow-shaped, the flowers pale red, the seed (nut) black and triangular, the angles even (not toothed). B. is a very common crop in the United States and in some parts of Europe; but is seldom sown in Britain, except as food for pheasants, as it requires continued dry weather in autumn for profitable harvesting. In Germany B. is much valued as a crop, particularly for moor-lands and other poor soils. In Bretagne, also, it is as extensively cultivated as wheat. It yields very abundantly, and requires little attention and little manure. Forty bushels or more per acre may be expected, weighing 46 or 48 lbs. per bushel; and notwithstanding the resemblance of the seed to grain in its qualities and uses, wheat, or any other cereal crop, generally succeeds well after B., if care has been taken to keep the land clear by tilling. The seed is most frequently used in the shape of groats, or made into pottage, and in the United States thin cakes made from it, and baked on a griddle, are extensively used. It is very nutritious, containing about 10 per cent. of gluten and 52 per cent. of starch, besides about 6 per cent. of gum and sugar. It is said to be as good as barley for fattening cattle, and better for horses than oats. But as the seed is covered with a very hard rind or thin shell, it must always be shelled before being given to cattle. Poultry are very fond of it. Beer is sometimes brewed from it, and it yields a spiritous liquor of good quality; indeed, it is frequently used in gin distilleries. As green fodder, the herbage of the plant is said to be more nutritious than clover;



Buckwheat (*Tagopyrum esculentum*): *a*, a Flower; *b*, a Seed; *c*, Root.



Bud. — Longitudinal Section through the Apical region of an upright shoot of *Hippuris vulgaris*: *s*, Growing point of the stem; *b, b, b*, the whorled leaves; *k, k*, the buds in their axils, which all develop into flowers; *g, g*, the first vessel (the dark parts of the tissue indicate the inner cortex with its intercellular spaces).



Bud.—Bryophyllum Leaf, from the edges of which two new plants have budded.



Bud.—Scales of Rhododendron



Bud.—*a*, Petiolar bud-scales of horse-chestnut, showing transitions to the two true leaves above; *b*, Opening ends of beech, showing stipular bud-scales.

BUCKWHEAT TREE—BUD.

but it acts as a narcotic on sheep. Bees delight in its flowers, and in some parts of the United States it is sown on this account. In America the seed is usually sown broadcast over the land which has been plowed in autumn or early spring, and well scarified or harrowed. About a bushel and a half of seed is required when sown broadcast, but a bushel is sufficient if drilled with a machine. In the latter case it should not be sown in narrower drills than one ft. apart, but two ft. is recommended as being better for the succeeding crop, as the wider intervals can be properly cultivated. It should not be sown too early, as the least frost is injurious. When the lower seeds are ripe it should be mown, as they are easily shed out if allowed to stand too long. When bread made from B. forms the principal food of the people, it is thought to have an injurious action on the brain. As a supplementary article, however, it is a favorite among all classes where it is raised.—TARTARIAN B. (*F.* or *P. Tataricum*) is distinguished by the toothed edges of the seeds and its more vigorous growth. It is hardy, and adapted for cold situations. It is a native of Siberia. It is very productive, but the seed falls out when ripe more readily than that of the common species; and the flour is darker colored, and somewhat bitter.—NOTCH-SEEDED B. (*F.* or *P. emarginatum*) is said to be a native of China. Its seeds are larger than those of Common B., and their angles are winged.—PERENNIAL B. (*F.* or *P. cymosum*) is a native of Nepaul, very vigorous in its growth, but producing comparatively little seed.—The triangular black seed of Climbing B. or Black-bine (*F.* or *P. Convolvulus*), familiar to every one who has eaten oatmeal cakes or porridge, greatly resembles B., but is smaller. The plant—a very common weed in gardens and cornfields in Britain—also exhibits much similarity, notwithstanding its different habit and twining stem.—DYER'S B. is *Polygonum tinctorium*. See POLYGOŒÆ.

BUCKWHEAT TREE (*Cliftonia ligustrina*, ord. *Cyrtolacææ*): evergreen shrub called 'titi' in the gulf states, where it grows around ponds and on the banks of streams. Its white blossoms are fragrant, and its fruit resembles buckwheat, whence the name.

BUCOLIC, n. *bū-kōl'ik* [L. *bucolicus*; Gr. *bukolikos*—from Gr. *bou'kolos*, a cowherd—from *bous*, an ox]: a pastoral poem: ADJ. relating to country affairs: see PASTORAL POETRY.

BUCZACZ, *bó'chatch*: town of the Austrian empire, in Galicia, 30 m. e.n.e. of Stanislawow, on the Stripa, a considerable affluent of the Dniester. A treaty of peace between the Poles and the Turks was signed here 1672. Pop. (1880) 9,970.

BUD, n. *bŭd* [Bav. and Dut. *botzen*, a knob, a bud; Bret. *bód*, a tuft: Dan. *pode*, a shoot: Bohem. *bodka*, a point]: the shoot or sprout on a plant containing the future leaf or flower; a flower not blown or expanded: V. to put forth shoots; to sprout; to grow as buds. BUD'DING, imp.: ADJ. putting forth buds; growing in freshness and beauty: N. a kind of grafting by buds. BUD'DED, pp. BUD'LET,

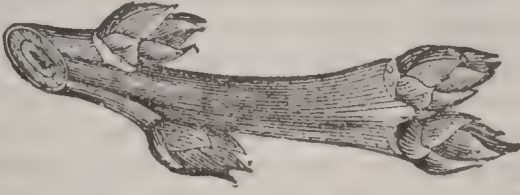
BUD.

n. a bud growing from another bud.—**SYN.** of 'bud, v.': to sprout; shoot; germinate.

BUD (*gemma*), in Botany: that part of a plant which contains the rudiments of leaves or flowers prior to their development. Buds are distinguished into *leaf-buds* and *flower-buds*, the former producing leaves and having a power of extension into a branch; the latter producing flowers only, and ordinarily destitute of this power of extension. The different parts of the flower being regarded, however, as *leaf-organs* or altered leaves (see **FLOWER**), the flower-bud may be regarded as merely a modified leaf-bud; and it is well known that by treatment which checks the luxuriant growth of a plant, it may be caused to produce flower-buds where only leaf-buds could otherwise have been expected to appear—a physiological fact, of which advantage is taken in various ways by gardeners, as by removing portions of the bark and even of the woody part of the stem, root-pruning, confining the roots in a flower-pot, etc. Buds usually appear in the axils of leaves, the terminal bud of a branch being no exception to this rule; and there is no leaf without one or more buds in its axil, although many never pass beyond the most rudimentary state. See **BRANCH**. In cold and temperate climates, buds are formed about mid-summer, beginning to appear as soon as the young branch which bears them has itself been properly developed, and are generally covered with scales and often also coated with resinous matter, by which their tender contents are protected from the severity of winter: but in the trees of warm climates, the protection of scales is generally wanting. Within the leaf-bud, the future leaves may be discovered, often very curiously folded or rolled up, and the different forms and positions which the leaves assume in the bud, are very characteristic of different kinds of plants. This is called the *vernation* (q.v.) of leaves, and is analogous to the *æstivation* (q.v.) of flowers. The buds of exogenous plants originate in cellular prolongations of the medullary rays bursting through the bark; those of endogenous plants are in communication with the cellular matter which lies between the bundles of woody tissue in the stem; and buds elongate into branches by the addition of new cellular matter to the extremity. Leaf-buds are capable of subsisting when separated from the parent plant and placed in favorable situations developing themselves into new plants with the most exact correspondence in their characteristics to the parent plant; and of this gardeners avail themselves in the process of *budding* (q.v.), and in various ways for the propagation of plants. Some plants propagate themselves by a natural detachment of buds (*bulbils* or *bulblets*) modified into a character analogous to that of *bulbs* (q.v.); and bulbs themselves may indeed be regarded as subterranean leaf-buds with thickened scales. The *eyes* of the potato are also subterranean leaf-buds, the tuber being regarded as a thickened subterranean stem; and all plants with subterranean stems produce subterranean leaf-buds, sending above ground only herbaceous annual shoots, as asparagus, the banana, etc. Buds may be produced in exogenous plants from the extremity of any medullary ray, and may be made to spring from a leafless

BUDA.

part of the stem by an incision, the effect of which is to direct a greater supply of sap to the part immediately beneath it. In a few plants, buds are produced on the edges, or even on the surface of leaves. In consequence of their power of independent existence, buds have been looked upon by some physiologists as distinct organized beings congregated in the tree or plant, a view which involves



Leaf-bud.

exaggeration, and therefore error.—Flower-buds cannot be used for budding, or otherwise for propagation of the plant, but when removed from their original stock always die.

Some of the lowest animals propagate themselves by buds (*gemmation*), and many of the zoophyte systems or polypidoms extend in this manner: see GEMMATION: REPRODUCTION: POLYPI: ZOOPHYTES. Also see BUDDING.

BUDA, *bó'dó* (Slavonic, *Bu'din*; German, *O'fen*): city of Hungary, forming with Pesth, *pēsht* (with which it is united by a magnificent suspension-bridge) the capital of the country; on the right bank of the Danube, about 130 m. s.e. of Vienna; lat. $47^{\circ} 29'$ n., long. $19^{\circ} 3'$ e. B. has a highly picturesque appearance, being built round the Schlossberg (Castle-hill) in the form of an amphitheatre, in the midst of a district covered with vineyards. Crowning this centre hill or rock, which has an elevation of 485 ft. above the sea, is the citadel; the palace in which are preserved the royal insignia of Hungary; and an old Gothic church. Behind, and towering above the rock, rises the Blocksberg, strongly fortified, with a precipitous face to the Danube, the slopes of the other sides being occupied with houses. B. has many educational and charitable institutions; and a fine observatory crowns the Blocksberg. It has some celebrated hot sulphur springs, with a temperature of $117^{\circ} 5'$ F., from which it derives its German name, Ofen (Oven). Three of the baths erected by the Turks are still in perfect preservation, and frequented by the common people. B. has some manufactures of silk, velvet, woolen, cotton, leather, and gunpowder; and cannon and type-foundries; but its chief trade is in wine, of which it produces between four and five millions of gallons annually. This is known as the 'Ofenerwein,' and is of excellent quality. B. is a place of great antiquity, but its importance dates from 1240, when the fortress was erected on the Schlossberg. During the inroads of the Turks it was regarded as the key of Christendom. It was captured by Solyman the Magnificent 1526, but retaken in the following year by Ferdinand I., King of Bohemia. In 1541, it was again taken by Solyman, who introduced into it a garrison of 12,000 janizaries; and it remained in

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the possession of the Turks until 1686, when it was captured by the Duke of Lorraine.

B. and Pesth (q.v.) were in 1872 incorporated with one another, the official name being the compound *Budapest*. Pop (1890) 506,384; (1900) 732,322.

BUDÆUS, *bū-dē'ūs* (Latinized form of *Guillaume Bude*): 1467–1540, Aug. 23; b. Paris: one of the greatest French scholars of his age. He studied at Paris and Orleans. His works on philology, philosophy, and jurisprudence show extensive learning, but the two best known are the *De Asse et Partibus ejus* (Paris 1514), which contains a very thorough investigation into ancient coins and the *Commentarii Linguae Græcæ* (Paris 1519), which greatly advanced the study of Greek literature in France, and is still held in high estimation by classical scholars. B.'s knowledge of Greek was particularly good. His style both in Latin and French is nervous, but harsh, and abounds in Greek constructions. His abilities were manifested not only in literature, but in public business. Louis XII. twice sent him to Rome as ambassador; and Francis I. also employed him in several negotiations. At B.'s suggestion, Francis founded the *Collège de France*, and was also persuaded to refrain from the prohibition of printing which the bigoted Sorbonne had advised in 1533. B. held several important offices. He was royal librarian, maître des requêtes, and provost of Paris. A collected edition of his works appeared at Basel 1557. B. was suspected of a leaning toward Calvinism. Certain circumstances render this highly probable. In his correspondence with his friend Erasmus, he repeatedly expresses his contempt for monks and ignorant ecclesiastics, and on one occasion terms the doctors of the Sorbonne 'prating sophists.' Besides, shortly after his death, his widow and several members of his family went to Geneva, and openly abjured Roman Catholicism.

BUDAON, *bô-dâ-on'*, or **BUDAUN**, or **BUDAYOON**, *bô-dâ-ôn'*: town of India, 140 m. n.w. of Lucknow, giving its name to a British dist. of the Rohilcund division of the lieut. governship of the N. W. Provinces. It is in 28° 2' n. lat., 79° 11' e. long. Its pop. was officially ascertained in 1881 to amount to 35,372. It was occupied by the mutineers and a body of liberated prisoners from Bareilly, 1857, June 1. The Europeans escaped by flight. It was captured by General Whitelock, 1858, Apr. 19.

The district of **BUDAON** is a level, fertile tract on the Ganges and its tributaries, of which the chief is the Ramgunga; area 2,002 sq. m.; pop.—nearly six-sevenths Hindus, and the rest mostly Mussulmans—(1891) 925,598.

BUDAPEST: see **BUDA**: **PESTH**.

BUDDÆUS, *bûd-dâ'ûs*, **JOHANN FRANZ**: Lutheran theologian: 1667–1829; b. Anklam, Prussia: prof. of philosophy at Halle, and afterward of theology at Jena. B. is the author of many valuable works, especially on moral and religious philosophy. Among the principal are: *Historia juris naturæ* (Jena, 1695); and *Elementa philosophiæ instrumentalis* (1703, 3 vols., many editions), highly esteemed in Germany.

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BUDDHISM, n. *bŭd'izm*, also spelled **BOODHISM**, n. *bŏd'izm* [*Buddha*, the enlightened]: a religion widely prevailing over a great part of Asia, whose founder was an Indian prince named **BUDDHA**, *bŭd'dă*, or **BOODH**, *bŏd*; he lived at some indefinite period B.C., and taught that all visible and sensible things are but manifestations of the Deity, that the human soul is an emanation from God, and that the soul will, by a holy life, again be absorbed into the divine essence; *Boodh* is practically an object of worship to his followers. **BUD'DHIST**, or **BOOD'HIST**, n. a worshipper of Buddha, and believer in his doctrines: **ADJ.** pertaining to. **BUDDHISTIC**, or **BOODHISTIC**, a. *bŏd-is'tik*, akin or tending to Buddhism: see **BUDDHISM**—**BUDDH**.

BUD'DHISM—**BUD'DHA**: an oriental religion, and its founder. Buddhism (from the title of 'The Buddha,' meaning 'the Wise,' 'the Enlightened,' acquired by its founder) has existed for 2,460 years, and may be said to be the prevailing religion of the world. In Hindustan, the land of its birth, it has now little hold, except among the Nepaulese and some other northern tribes; but it bears sway in Ceylon, and over the whole Eastern Peninsula; it divides the adherence of the Chinese with the systems of Confucius and Lao-tse, claiming perhaps two-thirds of the population; it prevails also in Japan (though not the established religion); and, n. of the Himalayas, it is the religion of Tibet (where it assumes the form of Lamaism), and of the Mongolian population of Central Asia, and extends to the very n. of Siberia, and even into Swedish Lapland. Its adherents are estimated at 400 millions—more than a third of the human race. Yet, till near the middle of this century, nothing was known in Europe respecting the nature and origin of this world-religion, beyond vague notices and conjectures. About 1828, Mr. B. H. Hodgson, British resident at the court of Nepaul, where Buddhism prevails, discovered the existence of a large set of writings in the Sanskrit language, forming the national canonical books. These books have since been found to be the texts from which the Buddhist scriptures of Tibet, Mongolia, and China must have been translated. The books of the Ceylon Buddhists are in the language called Pali; and though not translations of the Nepaulese standards, they are found to agree with them in substance, and to be only another and somewhat later version of the same traditions. Translations from the Ceylon standards are used by the Buddhists of Burmah and Siam. Copies of the Sanskrit books of Nepaul, having been sent by Mr. Hodgson to the Asiatic Societies of London and Paris, engaged the attention of the eminent Oriental scholar, Eugène Burnouf, who published 1844 his *Introduction to the History of Buddhism*; and this book may be said to have been the beginning of correct information, on the subject among the western nations.

Most diverse opinions had previously been held as to the time and place of the origin of Buddhism. Some looked upon it as a relic of what had been the original religion of Hindustan, before Brahmanism intruded and drove it out; a relic of a wide-spread primeval worship, whose ramifica

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tions it was endeavored to trace by identifying Buddha with the Woden of the Scandinavians, the Thoth or Hermes of the ancient Egyptians, and other mythological personages. Others held that it could not be older than Christianity, and must have originated in a blundering attempt to copy that religion—so striking are some points of resemblance. Although the means are still wanting of giving a circumstantial history of Buddhism, the main outline is no longer doubtful. Oriental scholars now concur in fixing the date of its origin about the beginning of B. C. 6th c., and the place in the n. of Hindustan. According to the Buddhist books, the founder of the religion was a prince of the name of Siddhartha, son of Suddhodana, King of Kapilavastu, which is placed somewhere on the confines of Oude and Nepaul. He is often called Sakya, which was the name of the family, and also Gautama, the name of the great 'Solar' race of which the family was a branch. The name Sakya often becomes Sakya-muni (*muni*, in San., means 'solitary,' and is allied to Gr. *monos*, the root of 'monk'), in allusion to the solitary habits assumed by the prince. To Gautama is frequently prefixed *Sramana*, meaning *ascetic*. Of the names, or rather titles, given to Siddhartha in his state of perfection, the most important is the *Buddha*,* which is from the root *budh*, to know, and according to Wilson, means properly, 'he to whom truth is known;' it is indicative of the leading doctrine of his system. Others are—'The Blessed' (Bhagavat); 'the Venerable of the World;' 'the Bodhisatva,' the import of which will be afterward explained. The history of this person is overlaid with a mass of extravagant and incredible legend; and at least one eminent Orientalist, Professor H. H. Wilson, thinks it still doubtful whether the Buddha was an actual historical personage, and not rather an allegorical figment. Agreeing that the doctrine was introduced about the time assigned, he thinks it more likely that it originated with a school formed of persons of various castes, comprising even Brahmans. But by Oriental authorities generally, the Buddha is received as the actual personal founder of the religion that goes by his name.

Assuming that the Buddha was a real person, and that there is a basis of fact under the mass of extravagant fable with which he is surrounded, the history of Buddhism may be thus briefly outlined: The Prince Siddhartha gives early indications of a contemplative, ascetic disposition; and his father, fearing lest he should desert his high station as Kshatriya (see HINDUISM and CASTE) and ruler, and take to a religious life, has him early married to a charming princess, and surrounded with all the splendor and dissipation of

* There is a confusing variety in the modes in which this name is spelled by European writers. S. Hardy, in his *Manual of Buddhism*, gives more than 50 forms that have come under his notice. Some of the more common are: Bud, Bod, But, Budh, Boodh, Bhlood, Budo, Buddow, Bontta, Poota, Poth, Pot. The Chinese, owing to the meagreness of their articulations, seem to have been unable to come nearer to the real sound than Fo, Foe, or Fohi; from the same cause, they convert Brahma into Fan.

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a luxurious court. Twelve years spent in this environment only deepen the conviction that all that life can offer is vanity and vexation of spirit. He is constantly brooding over the thought that old age, withered and joyless, is fast approaching; that loathsome or racking sickness may at any moment seize him; that death will at all events soon cut off all present sources of enjoyment, and usher in a new cycle of unknown trials and sufferings. These images hang like Damocles' swords over every proposed feast of pleasure, and make enjoyment impossible. He therefore resolves to try whether a life of austerity will not lead to peace; and, although his father seeks to detain him by setting guards on every outlet of the palace, he escapes, and begins the life of a religious mendicant, being now about 30 years old. To mark his breaking off all secular ties he cuts off the long locks that were a sign of his high caste; and as the shortened hair turned upward, he is always represented in figures with curly hair, which induced early European writers to consider him as of Ethiopian origin. He commences by studying all that the Brahmans can teach him, but finds their doctrine unsatisfactory. Six years of rigorous asceticism are equally vain; and resolving to return to a more genial life he is deserted by his five disciples, and then undergoes a fierce temptation from the demon of wickedness. But no discouragement or opposition can divert Sakya-muni from the search after deliverance. He will conquer the secret by sheer force of thinking. He sits for weeks plunged in abstraction, revolving the causes of things. If we were not born, he reflects, we should not be subject to old age, misery, and death; therefore the causes of these evils is birth. But whence comes birth or continued existence? Through a long concatenation of intermediate causes, he arrives at the conclusion that ignorance is the ultimate cause of existence; and therefore, with the removal of ignorance, existence and all its anxieties and miseries would be cut off at their source. Passing through successive stages of contemplation, he realizes this in his own person, and attains the perfect wisdom of the Buddha. The scene of this final triumph received the name of Bodhimanda (the seat of intelligence), and the tree under which he sat was called Bodhidruma (the tree of intelligence), whence Bo-tree. The Buddhists believe the spot to be the centre of the earth. Twelve hundred years after the Buddha's death, Hiouen-Thsang, the Chinese Pilgrim, found the Bodhidruma—or a tree that passed for it—still standing. Although the religion of Buddha is extinct in the neighborhood, there are, about 5 m from Gaya Proper, in Bahar, extensive ruins, and an old dagoba, or a temple, which are believed to mark the place. Near the temple there flourished 1812, a peepul-tree, apparently 100 years old, which may have been planted in the place of the original Bo-tree.

Having arrived at the knowledge of the causes of misery, and of the means by which these causes are to be counteracted, the Buddha was now ready to lead others on the road to salvation. It was at Benares that he first preached,

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or, in the consecrated phrase, 'turned the wheel of the law;'* but the most important of his early converts was Bimbisara, sovereign of Magadha (Bahar) whose dynasty continued for many centuries to patronize the new faith. During the 40 years that he continued to preach his strange gospel, he appears to have traversed a great part of n. India, combating the Brahmans, and everywhere making numerous converts. He died at Kusinagara (in Oude), at the age of 80, B.C. 543; and his body being burned, the relics were distributed among a number of contending claimants, and monumental tumuli were erected to preserve them. See TOPES.

The most important point in the history of Buddhism, after the death of its founder, is that of the three councils which fixed the canon of the scriptures and the discipline of the church. The Buddha had written nothing himself; but his chief followers, assembled in council immediately after his death, proceeded to reduce his teaching to writing. These canonical writings are divided into three classes forming the Tripitaka, or 'triple basket.' The first class consist of the *Soutras*, or discourses of the Buddha; the second contains the *Vinaya*, or discipline; and the third the *Abhidharma*, or metaphysic. The first is evidently the fundamental text out of which all the subsequent writings have been elaborated. The other two councils probably revised and expanded the writings agreed upon at the first, adding voluminous commentaries. As to the dates of the other two councils, there are irreconcilable discrepancies in the accounts; but at all events the third was not later than B.C. 240, so that the Buddhist canonical scriptures, as they now exist, were fixed two centuries and a half before the Christian era. The Buddhist religion early manifested a zealous missionary spirit; and princes and even princesses, became devoted propagandists. A prince of the royal house of Magadha, Mahindo, carried the faith to Ceylon, B.C. 307. The Chinese annals speak of a Buddhist missionary as early as B.C. 217; and the doctrine made such progress that in A.D. 65, it was acknowledged by the Chinese emperor as a third state religion. The Chinese Buddhists have always looked on India as their 'holy land;' and beginning with the 4th c. of our era, a stream of Buddhist pilgrims continued to flow from China to India during six centuries. Several of these pilgrims have left accounts of their travels, which throw a light on the course of Buddhism in India, and on the internal state of the country in general, that is looked for in vain in the literature of India itself: see HIOUEN-TSANG. As to the spread of Buddhism n. of the Himalayan mountains, we have the historical fact, that a Chinese general, having, about B.C. 120, defeated the barbarous tribes to the n. of the Desert of Gobi, brought back as a trophy a golden statue of the Buddha.

* From a too literal understanding of this phrase have arisen, probably, those praying-wheels, or rather wheels for meditation, seen standing before Buddhist monasteries in Tibet and elsewhere. The doctrines of Buddha are inscribed on the wheel, which is then set in motion by a windlass, or even by horse-power. The individual monks have portable ones, with which they perform their devotions wherever they may happen to be.

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A prominent name in the history of Buddhism is that of Asoka, king of Magadha, in the 3d c. of our era, whose sway seems to have extended over the whole peninsula of Hindustan, and even over Ceylon. This prince was to Buddhism what Constantine was to Christianity. He was at first a persecutor of the faith, but being converted—by a miracle, according to the legend—he became its zealous propagator. Not, however, as princes usually promote their creed; for it is a distinguishing characteristic of Buddhism, that it has never employed force, hardly even to resist aggression. Asoka showed his zeal by building and endowing viharas or monasteries, and raising topes and other monuments over the relics of Buddha and in spots remarkable as the scenes of his labors. Hiouen-Tsang, in the 7th c. of our era, found topes attributed to Asoka from the foot of the Hindu Kush to the extremity of the peninsula. There are found, also, in different parts of India, edicts inscribed on rocks and pillars, inculcating the doctrines of Buddha. The edicts are in the name of King Piyadasi; but Orientalists are almost unanimous in holding Piyadasi and Asoka as the same. Not a single building or sculptured stone has been discovered in continental India of earlier date than the reign of this monarch, whose death is assigned to B.C. 226. A remarkable spirit of charity and toleration runs through these royal sermons. The 'king beloved of the gods' desires to see the ascetics of all creeds living in all places, for they all teach the essential rules of conduct. 'A man ought to honor his own faith only; but he should never abuse the faith of others. . . . There are even circumstances where the religion of others ought to be honored, and in acting thus a man fortifies his own faith, and assists the faith of others.'

For the glimpses which we get of the state of Buddhism in India, we are indebted chiefly to the accounts of Chinese pilgrims. Fa hian, at the end of the 4th c., found some appearances of decline in the e. of Hindustan, its birthplace, but it was still strong in the Punjab and the north. In Ceylon it was flourishing in full vigor, the ascetics or monks numbering from 50,000 to 60,000. In the 7th c.—that is, 1,200 years after the death of the Buddha—Hiouen Tsang represents it as widely dominant and flourishing, and patronized by powerful rajahs. Its history was doubtless more or less checkered. The Brahmans, though little less tolerant than the followers of Buddha, seem to have been in some cases roused into active opposition; and some princes employed persecution to put down the new faith.

It was probably during the first four or five centuries of our era, and as a result of persecution, that Buddhists, driven from the great cities, retired among the hills of the west, and there constructed those cave-temples which, for their number, vastness, and elaborate structure, continue to excite the wonder of all who see them. There are reckoned to be not fewer than 900 Buddhist excavations extant in India, nearly all within the presidency of Bombay. How the destruction of the Buddhist faith in Hindustan came about—whether from internal corruption or the persecution

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of powerful princes, adherents of the old faith—is utterly unknown. But it is certain that from the time of Hiouen-Thsang's visit its decay must have been rapid beyond precedent; for about the 11th or 12th c., the last traces of it disappear from the Indian peninsula.

What, then, is the nature of this faith, which has been for so long, and is still, the sole light of so many millions of human beings? In answering this question, we must confine ourselves here to a brief outline of the intellectual theory on which the system is based, and of the general character of its morality and ritual observances, as they were conceived by the founder and his more immediate followers, referring for the various forms which the external observances have assumed to the several countries where it is believed and practiced: see **BURMAH: CEYLON: CHINA: JAPAN: LAMAISM.**

Buddhism is based on the same views of human existence, and the same philosophy of things in general, that prevailed



Section of Buddhist Cave-temple at Karli—from Fergusson's *Hand-book of Architecture*.

among the Brahmans. It accepts without questioning, and in its most exaggerated form, the doctrine of the transmigration of souls, which lies at the root of so much that is strange in the Eastern character. For a particular account of this important doctrine or notion, which seems ingrained in the constitution of Eastern minds, and without a knowledge of which no phase of thought or feeling among them can be understood, see **TRANSMIGRATION**; while for the peculiar cosmogony or system of the universe with which it is associated, and which is substantially the same among Hindus and Buddhists, see **HINDUISM**. It is sufficient here to say, that, according to Buddhist belief, when a man dies he is immediately born again, or appears in a new shape; and that shape may, according to his merit or demerit, be any of the innumerable orders of being composing the Buddhist universe—from a clod to a divinity. If his demerit would not be sufficiently punished by a degraded earthly existence—in the form, for instance, of a woman or a slave, of a persecuted or a disgusting animal, of a plant or even of a piece of inorganic matter—he will be born in some one of the 136 Buddhist hells, in the interior of the earth. These places of punishment have a regular gradation in the intensity of the suffering and in the length of time the sufferers live, the

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least term of life being ten millions of years, the longer-terms being almost beyond the powers of even Indian notation to express. A meritorious life, on the other hand, secures the next birth either in an exalted and happy position on earth, or as a blessed spirit, or even divinity, in one of the many heavens; in which the least duration of life is about ten billions of years. But, however long the life, whether of misery or of bliss, it has an end, and at its close the individual must be born again, and may again be either happy or miserable—either a god or, it may be, the vilest inanimate object.* The Buddha himself, before his last birth as Sakyamuni, had gone through every conceivable form of existence, on the earth, in the air, and in the water, in hell and in heaven, and had filled every condition in human life. When he attained the perfect knowledge of the Buddha, he was able to recall all these existences; and a great part of the Buddhist legendary literature is taken up in narrating his exploits when he lived as an elephant, as a bird, as a stag, and so forth.

The Buddhist conception of the way in which the quality of actions—which is expressed in Pali by the word *Karma*, including both merit and demerit—determines the future condition of all sentient beings, is peculiar. They do not conceive any god or gods as being pleased or displeased by the actions, and as assigning the actors their future condition by way of punishment or of reward. The very idea of a god, as creating, or in any way ruling the world, is utterly absent in the Buddhist system. God is not so much as denied; he is simply not known. The opinion has been confidently and generally held that a nation of atheists never existed; however this may be, it is no longer to be disputed that the numerous Buddhist nations are, in the department of their intellectual or philosophical conceptions, atheist; for their philosophy recognizes no beings with greater supernatural power than any man is supposed capable of attaining to by virtue, austerity, and science; and a remarkable indication of this is seen in the fact that some at least of the Buddhist nations—the Chinese, Mongols, and Tibetans—have no word in their languages to express the notion of God. The future condition of the Buddhist, then, is not assigned him by the Ruler of the universe; the ‘Karma’ of his actions determines it by a sort of virtue inherent in the nature of things—by the blind and unconscious concatenation of cause and effect. But the laws by which consequences are regulated seem dark, and even capricious. A bad action may lie dormant, as it were, for many existences; the taint, however, is there, and will some time or other break out. A Buddhist is thus never at a loss to account for any calamity that may befall himself or others.

Another basis of Buddhism is the assumption that hu-

* One legend makes Bhagavat, in order to impress upon the monks of a monastery the importance of their duties, point to a besom, and, by his supernatural insight, reveal to them that it had once been a novice, who had been negligent in sweeping the hall of assembly; the walls and pillars, again, he told them, had once existed as monks, who soiled the walls of the hall by spitting upon them.

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man existence is on the whole miserable, and a curse rather than a blessing. This notion, or rather feeling, is, like transmigration, common to Buddhism and Brahmanism, but is even more prominent in Buddhism than in the old faith. It is difficult for a European to conceive this state of mind or to believe that it can be habitual in a whole people; and many signal errors in dealing with the Indian nations have arisen from overlooking the fact. Not excluding the possibility of deep causes in their moral or intellectual constitution, one cause seems to lie chiefly in the comparatively feeble physical organization of Easterns in general. With a vigorous animal vitality there is a massive enjoyment in mere bodily existence sufficient to drown a large amount of irritation and suffering, leaving life still sweet and desirable; while the spontaneous activity attending this vigor, makes it a pleasure instead of a pain to contend with and conquer difficulties. The Indian, on the contrary, even when he looks robust, lacks intensity of animal vitality; and, therefore, bodily existence, in itself, has to him little relish. Tedium of life, it is well known, arises more from negative than positive sources; and it requires but little bitter added to make his cup disgusting. So far, again, from finding activity a source of enjoyment, exertion is painful, and entire quiescence is, in his eyes, the highest state of conceivable enjoyment. When to this we add that want of security and peace, and that habitual oppression of the many by the few, with all the attendant degradation and positive suffering, which may be considered the normal state of things in the East, need we wonder that to men so constituted and so circumstanced, life should seem a burden, a thing rather to be feared than otherwise? The little value that Hindus set upon their lives is manifested in many ways. The punishment of death has little or no terror for them, and is even sometimes coveted as an honor. For, in addition to the little value of their present existence, they have the most undoubting assurance that their soul, if dislodged from its present tenement, will forthwith find another, with a chance, at least, of its being a better one.

In the eyes, then, of Sakya-muni and his followers, sentient existence was hopelessly miserable. Misery was not a mere taint in it, the removal of which would make it happy; misery was its very essence. Death was no escape from this inevitable lot; for, according to the doctrine of transmigration, death was only a passage into some other form of existence equally doomed. Even the heaven and the state of godhead which form part of the cycle of changes in this system, were not final; and this thought poisoned what happiness they might be capable of yielding. Brahman philosophers had sought escape from this endless cycle of unsatisfying changes, by making the individual soul be absorbed in the universal spirit (Brahm); Gautama had the same object in view, viz., exemption from being born again; but he sought it by a different road. His philosophy was utterly atheistic, like that of the original Sankhya school of philosophy, whose views he chiefly bor-

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rowed, and ignored a supreme God or Creator; it did not leave even an impersonal spirit of the universe into which the human soul could be absorbed. Gautama sees no escape but in what he calls NIRVANA, the exact nature of which has been matter of dispute. According to its etymology, the word means 'extinction,' 'blowing out,' as of a candle; and most Orientalists are agreed that in the Buddhist scriptures generally it is practically equivalent to annihilation. Even in those schools which attempt to draw a distinction, the distinction is of the most evanescent kind. See NIRVANA.

The key of the whole scheme of Buddhist salvation lies in what Gautama called his Four Sublime Verities. The first asserts that pain exists; the second, that the cause of pain is desire or attachment—the meaning of which will appear further on; the third, that pain can be ended by Nirvana; and the fourth shows the way that leads to Nirvana. This way to Nirvana consists in eight things: right faith, right judgment, right language, right purpose, right practice, right obedience, right memory, and right meditation. In order to understand how this method is to lead to the proposed end, we must turn to the metaphysical part of the system contained in the 'concatenation of causes' which may be looked upon as a development of the second 'verity'—namely, that the cause of pain is desire—or which may be looked upon rather, as the analysis upon which that verity is founded. The immediate cause of pain is birth, for if we were not born, we should not be exposed to death or any of the ills of life. Birth again, is caused by previous existence; it is only a transition from one state of existence into another. All the actions and affections of a being throughout his migrations leave their impressions, stains, attachments adhering to him, and the accumulation of these determines at each stage the peculiar modification of existence that he must next assume. But for these adhesions, the soul would be free; not being bound down to migrate into any determinate condition of life, the result would be that it need not migrate at all. These adhesions or attachments, good and bad, depend upon desire, or rather upon affection of any kind in the soul toward the objects; as if only what moved the soul to desire or avoidance could leave its impress upon it. We thus arrive at desire—including both the desire to possess, and the desire to avoid—as one link in the chain of causes of continued existence and pain. Beyond this the dependence of the links is very difficult to trace; for desire is said to be caused by perception, perception by contact, and so on, until we come to ideas. Ideas, however, are mere illusions, results of ignorance or error, attributing durability and reality to that which is transitory and imaginary. Cut off this ignorance, bring the mind into a state in which it can see and feel the illusory nature of things, and forthwith the whole train vanishes; illusory ideas, distinction of forms, senses, contact, perception, desire, attachment, existence, birth, misery, old age, death!

Morality and Religious Observances.—The eight parts or

particulars constituting the theoretical 'way' (to Nirvana), were developed by Gautama into a set of practical precepts enjoining the various duties of common life and of religion. They all are ostensibly intended as means of counteracting or destroying the chain of causes that tie men to existence and necessitate being born again, especially that most important link in the chain constituted by the attachments or desires resulting from former actions, although the special fitness of some of the precepts for that end is far from being apparent. It is easy to understand how the austerities that are prescribed might subdue the passions and affections, and lessen the attachment to existence; but how the exercise of benevolence, of meekness, of regard to truth, of respect to parents, etc., on which Gautama laid so much stress, should have this effect, it is difficult to conceive. Luckily for the Buddhist world, Gautama's moral nature was better than his logic, or rather than the perverse assumptions from which his logic starts; and as he felt strongly—what all men feel more or less—that these things are essentially right and good, he takes it for granted that they must contribute to what was in his eyes the chief good—escape from existence, or Nirvana. Moreover, as men's usual 'desires' were seen by him to be contrary to meekness, benevolence, and the like, he might well judge that to practice these virtues might tend to repress the power of 'desire' and to end its sway. In delivering his precepts the Buddha considers men as divided into two classes—those who have embraced the religious life (*sramanas*) and those who continue in the world or are laymen. These last are considered as too much attached to existence to feel any desire or have any hope of emancipation, at least at this stage. But there are certain precepts which it is necessary for all to obey, that they may not bring greater misery upon themselves in their next births, and rivet the bonds of existence more indissolubly. There are ten moral precepts or 'precepts of aversion.' Five of these are of universal obligation—viz., not to kill; not to steal; not to commit adultery; not to lie; not to be drunken. Other five are for those entering on the direct pursuit of Nirvana by embracing the religious life: to abstain from food out of season—that is, after mid-day; to abstain from dances, theatrical representations, songs, and music; to abstain from personal ornaments and perfumes; to abstain from a lofty and luxurious couch; to abstain from taking gold and silver. For the regular ascetics or monks, there are a number of special observances of great severity. They are to dress only in rags, sewed together with their own hands, and to have a yellow cloak thrown over the rags. They are to eat only the simplest food, and to possess nothing except what they get by collecting alms from door to door in their wooden bowl. They are allowed only one meal, and that eaten before mid-day. For a part of the year, they are to live in forests with no shelter except the shadow of a tree, and there they must sit on their carpet even during sleep, to lie down being forbidden. They are allowed to enter

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the nearest village or town to beg food, but they must return to their forests before night.

Beside the absolutely necessary 'aversions and observances' above mentioned, the transgression of which must lead to misery in the next existence, there are certain virtues or 'perfections' of a supererogatory or transcendent kind, that tend directly to 'conduct to the other shore' (Nirvana). The most essential of these are almsgiving or charity, purity, patience, courage, contemplation, and knowledge. Charity or benevolence may be said to be the characteristic virtue of Buddhism—a charity boundless in its self-abnegation, and extending to every sentient being. The benevolent actions done by the Buddha himself, in the course of his many millions of migrations, were favorite themes with his followers. On one occasion, seeing a tigress starved and unable to feed her cubs, he hesitated not to make his body an oblation to charity, and allowed them to devour him. Benevolence to animals, with that tendency to exaggerate a right principle so characteristic of the East, is carried among the Buddhist monks to the length of avoiding the destruction of fleas and the most noxious vermin, which they remove from their persons with all tenderness.

There are other virtues of a secondary kind, though still highly commendable according to the Buddhist standard. Thus, not content with forbidding lying, the Buddha strictly enjoins the avoidance of all offensive and gross language, and of saying or repeating anything that can set others at enmity among themselves; it is a duty, on the contrary, especially for a sramana, to act on all occasions as a peacemaker. Patience under injury, and resignation in misfortune, are strongly inculcated. Humility, again, holds a no less prominent place among Buddhist graces than among the Christian. The Buddhist saints are to conceal their good works, and display their faults. As the outward expression of this sentiment of humility, Gautama instituted the practice of confession. Twice a month, at the new and at the full moon, the monks confessed their faults aloud before the assembly. This humiliation and repentance seems the only means of expiating sin that was known to Gautama. Confession was exacted of all believers, only not so frequently as of the monks. The edicts of Piyadasi recommend a general and public confession at least once in five years. The practice of public confession seems to have died out by the time of Hiouen-Thsang's visit to India.

Such are the leading features of the moral code of the Buddha, of which, even with its evident crudities and exaggerations, it has been said, that 'for pureness, excellence, and wisdom, it is only second to that of the Divine Lawgiver himself.' But the original morality of Buddhism has, in the course of time, been disfigured by many subtilties, puerilities, and extravagances, derived from the casuistry of the various schools of later times; as the casuistry of the Jesuits, for instance, perverted many of the precepts of Christianity. The theory on which the

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Buddha founds his whole system gives, it must be confessed, too much scope to such perversions; for, on that theory, truth is to be spoken, self to be sacrificed, benevolence to be exercised, not for the sake of the good thus done to others, but solely for the effect of this conduct on the soul of the actor, in preparing him for escape from existence. The virtue was selfishness unmixed. To teach men 'the means of arriving at the other shore,' was another expression for teaching virtue; and that other shore was annihilation. On this principle, the Buddhist casuist can, like the Jewish, render of none effect the universal law of charity and the duty of respecting and aiding parents, on which the Buddha laid such stress. Thus, a Bikshu—that is, one who has engaged to lead a life of self-denial, celibacy, and mendicancy, and is thus on the high road to Nirvana—is forbidden to look at or



Colossal Gautama near Amarapura, Burmah.

converse with a female, lest any disturbing emotion should ruffle the serene indifference of his soul; and so important is this, that 'if his mother have fallen into a river, and be drowning, he shall not give her his hand to help her out; if there be a pole at hand, he may reach that to her; but, if not, she must drown.'—*Wilson*.

Contemplation and science or knowledge (i.e., of the concatenation of causes and effects) are ranked as virtues in Buddhism, and hold a prominent place among the means of attaining Nirvana. It is reserved, in fact, for abstract contemplation to effect the final steps of the deliverance. Thought is the highest faculty of man, and, in the mind of an Eastern philosopher, the mightiest of all forces. A king who had become a convert to Buddhism is represented as seating himself with his legs crossed, and his mind collected; and 'cleaving, with the thunderbolt of science, the mountain of ignorance,' he saw before him the desired state. It is in this cross-legged, contemplative position that the Buddha is almost always represented—

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that crowning intellectual act of his, when, seated under the Bo-tree (q. v), he attained the full knowledge of the Buddha, saw the illusory nature of all things, broke the last bonds that tied him to existence, and stood delivered for evermore from the necessity of being born again, being considered the culmination of his character, and the highest object of imitation to all his followers.

'Complete' Nirvana or extinction cannot, of course, take place till death; but this state of preparation for it, called simply Nirvana, seems attainable during life, and was, in fact, attained by Gautama himself. The process by which the state is attained is called *Dhyana*, and is neither more nor less than ecstasy or trance, which plays so important a part among mystics of all religions. The individual is described as losing one feeling after another, until perfect apathy is attained, and he reaches a region 'where there are neither ideas, nor the idea of the absence of ideas!'

The *ritual* or *worship* of Buddhism—if worship it can be called—is very simple in its character. There are no priests, or clergy, properly so called. The *Sramanas* or *Bikshus* (mendicants) are simply a religious order—a kind of monks, who, in order to the more speedy attainment of Nirvana, have entered on a course of greater sanctity and austerity than ordinary men; they have no sacraments to administer or rites to perform for the people, for every Buddhist is his own priest. The only thing like a clerical function that they discharge, is to read the scriptures or discourses of the Buddha in stated assemblies of the people for that purpose. They have also everywhere, except in China, a monopoly of education; and thus in Buddhist countries education, whatever may be its quality, is very generally diffused. In some countries, the monks are exceedingly numerous; around Lhasa in Tibet, for instance, they are said to be one-third of the population. They live in *viharas* or monasteries, and subsist partly by endowments, but mostly by charity. Except in Tibet, they are not allowed to engage in any secular occupation. The vow is not irrevocable. This incubus of monachism constitutes the great weakness of Buddhism in its social aspect. For further particulars regarding Buddhist monks and monasteries, as well as the forms of Buddhist worship generally, see the respective titles of the countries where the religion prevails: also see LAMAISM.

The adoration of the statues of the Buddha and of his relics is the chief external ceremony of the religion. This, with prayer and the repetition of sacred formulas, constitutes the ritual. The centres of the worship are the temples containing statues, and the topes or tumuli erected over the relics of the Buddha, or of his distinguished apostles, or on spots consecrated as the scenes of the Buddha's acts. The central object in a Buddhist temple, corresponding to the altar in a Rom. Cath. church, is an image of the Buddha, or a dagoba or shrine containing his relics. Here flowers,*

* The quantity of flowers used as offerings is prodigious. A royal

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fruit, and incense are daily offered, and processions are made with singing of hymns. Of the relics of the Buddha, the most famous are the *teeth* that are preserved with intense veneration in various places. Hiouen-Tsang saw more than a dozen of them in different parts of India; and the great monarch Ciladitya was on the eve of making war on the king of Cashmere for the possession of one, which, though by no means the largest, was yet an inch and a half long. The tooth of the Buddha preserved in Ceylon, a piece of ivory about the size of the little-finger, is exhibited very rarely, and then only with permission of the English government—so great is the concourse and so intense the excitement. See CEYLON.

There appears at first sight to be an inconsistency between this seeming worship of the Buddha, and the theory by which he is considered as no longer existing. Yet the two things are really not irreconcilable; not more so, at least, than theory and practice often are. With all their admiration of the Buddha, his followers have never made a god of him. Gautama is only the last Buddha—the Buddha of the present cycle. He had predecessors in the cycles that are past (24 Buddhas of the past are enumerated, and Gautama could even tell their names); and when, at the end of the present cycle, all things shall be reduced to their elements, and the knowledge of the way of salvation shall perish with all things else; then, in the new world that shall spring up, another Buddha will appear, again to reveal to the renascent beings the way to Nirvana. Gautama foretold that Mitraya, one of his earliest adherents, should be the next Buddha * (the Buddha of the future), and he gratified several of his followers with a like prospect in after cycles. The Buddha was thus no greater than any mortal may aspire to become. The prodigious and supernatural powers which the legends represent him as possessing, are quite in accordance with Indian ideas; for even the Brahmans believe that by virtue, austerities, and science, a man may acquire power to make the gods tremble on their thrones.

The Buddha, then, is not a god; he is the ideal of what any man may become; and the great object of Buddhist worship is to keep this ideal vividly in the minds of the believers. In the presence of the statue, the tooth, or the footprint, the devout believer vividly recalls the example of him who trod the path that leads to deliverance. This veneration of the memory of Buddha is perhaps hardly distinguishable, among the ignorant, from worship of him as a present god; but in theory, the ritual is strictly commemorative, and does not necessarily involve idolatry, any more than the garlands laid on the tomb of a parent by a pious child. See TOPE.

devotee in Ceylon, in the 15th c., offered on one occasion 6,480,320 flowers at the shrine of the tooth. At one temple it was provided that there should be offered 'every day 100,000 flowers, and each day a different flower.'

* One who is on the way to become a supreme Buddha, and has arrived at that stage when he has only one more birth to undergo, is styled a *Bodhisatva* (having the essence of knowledge); a mere candidate for Nirvana is an *arhat* (venerable).

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The prayers addressed to the Buddha are more difficult to reconcile with the belief in his having ceased to exist. It is improbable, indeed, that the original scheme of Buddhism contemplated either the adoration of the statutes of the Buddha, or the offering of prayers to him after his death. These are an after-growth—accretions upon the simple scheme of Gautama, and in a manner forced upon it during its struggle with other religions; for a system of belief that seeks to supplant other systems, finds itself enticed to present something to rival and outdo them, if possible, at every point. Even the Christian church, in the middle ages, adopted with this view many of the rites and legends of paganism that were quite inconsistent with its own character; merely casting over them a slight disguise, and giving them Christian names. Prayer, too, is natural to man—an irrepressible instinct, and had to be gratified. And then the inconsistency in uttering prayers when there is no one to hear or answer, glaring as it appears to us, is by no means great to the Eastern mind. Prayers, like other sacred formulas, are conceived less as influencing the will of any superior being to grant the request than as working in some magical way—producing their effects by a blind force inherent in themselves. They are, in short, mere incantations or charms. Even the prayers of a Brahman, who believes in the existence of gods, do not act so much by inclining the deity addressed to favor the petitioner, as by compelling him through their mysterious potency—through the operation of a law above the will of the highest gods. The Buddhist, then, may well believe that a formula of prayer in the name of ‘the Venerable of the world’ will be potent for his good in this way, without troubling himself to think whether any conscious being hears it or not.

The element in Buddhism which more than any other, perhaps, gave it an advantage over all surrounding religions, and led to its surprising extension, was the spirit of universal charity and sympathy that it breathed, as contrasted with the exclusiveness of caste. In this respect it held much the same relation to Brahmanism that Christianity did to Judaism. It was, in fact, a reaction against the exclusiveness and formalism of Brahmanism—an attempt to render it more catholic, and to throw off its intolerable burden of ceremonies. Buddhism did not expressly abolish caste, but only declared that all followers of the Buddha who embraced the religious life were thereby released from its restrictions; in the bosom of a community in which all equally renounced the world, high and low, the twice-born Brahman and the outcast, were brethren. This was the very way that Christianity dealt with the slavery of the ancient world. This opening of its ranks to all classes and to both sexes—for women were admitted to equal hopes and privileges with men, and one of Gautama’s early female disciples is to be the supreme Buddha of a future cycle—no doubt gave Buddhism one great advantage over Brahmanism. The Buddha, says M. Müller, ‘addressed himself to castes and outcasts. He promised salvation to all; and he commanded his disciples to preach his doctrine in all places and to all

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men. A sense of duty, extending from the narrow limits of the house, the village, and the country, to the widest circle of mankind, a feeling of sympathy and brotherhood toward all men, the idea, in fact, of humanity, were first pronounced by Buddha.' This led to that remarkable missionary movement, already adverted to, which, beginning B.C. 300, sent forth a succession of devoted men, who spent their lives in spreading the faith of Buddha over all parts of Asia.

In the characteristic above mentioned, and in several other respects, Buddhism presents resemblances to Christianity, and this in spite of the perverse theory on which it is founded. The analogies and coincidences, though not reaching to any depth, are numerous and striking to a casual observer.

It is easy to make Buddhism ridiculous, by giving prominence to the extravagances and the almost inconceivable puerilities and absurdities with which the system has been overloaded. But this is not to depict, it is to caricature. It is neither wise nor good for Christian writers to treat of heathen religions in such fashion. The only fair—the only true account of any religion, is that which enables the reader to conceive how human beings may have come to believe it and live by it. See Oldenberg's excellent treatise, *Buddha* (1881; Eng. transl. 1882); Spence Hardy's *Manual of Buddhism*; Koeppen's great work, *Die Religion des Buddha* (1857); *Buddhism*, by Rhys Davids (1879); Saint-Hilaire's *Le Bouddha*; Max Müller *On Buddhist Nihilism*; and the works of Eitel, Schlagintweit, and Alabaster on Chinese, Tibetan, and Siamese Buddhism, respectively.

BUDDING; sometimes called INOCULATION: an operation analogous to GRAFTING (q.v.), of which indeed it is merely a particular mode, in which a leaf-bud is used as a graft instead of a young shoot. It is generally preferred for trees which are apt to throw out much gum when wounded, as the plum, cherry, peach, apricot, and stone-fruits in general, also for roses and many other flowering shrubs. The time for it is when the bud is perfectly



formed, about or a little after midsummer. The subjoined cut represents the various parts in budding: *a* is the bud cut out, with a shield of bark attached to it; *b*, the stem, with a slit in the bark to receive the shield attached to the bud; *c*, the bud inserted and the leaf cut away. The bud to be used is taken, by means of a sharp knife, from the

BUDDLE—BUDE BURNER.

branch on which it has grown—generally a branch of the former year—a small portion of the bark and young wood being taken with it, extending to about half an inch above and three-quarters of an inch below the bud. The woody part is then separated from the bark and bud; but care is to be taken that the bud itself is not injured, which, however, is always the case when the operation is attempted before the bud is sufficiently matured, and is indicated by a hollow left at the bud when the wood has been removed. A longitudinal and a transverse cut are made in the bark of the stock intended to receive the bud, in the form of the letter T; the bark is raised on both sides, for which purpose the handle of the *budding-knife* generally terminates in a thin ivory blade, and the bud is inserted, the bark attached to the bud being cut across so as to join exactly to the transverse cut in that of the stock, that the bud may be nourished by the descending sap. The leaf in the axil of which the bud grew is cut off. The newly-inserted bud is for a time preserved in its place, and prevented from too much access of air by strands of bass matting. The process just described is distinctively called *shield-budding*, and is the most common method. Other methods are occasionally employed, as *reversed shield-budding*, in which the incisions are in the form of the letter T reversed, which is sometimes practiced with trees of the orange family and others in which there is a very great flow of descending sap; and *scallop-budding*, in which a thin slip of bark is removed from the stock and a similar slip bearing the bud is placed upon it, the upper edge and one of the lateral edges being made to fit exactly. Scallop-budding may be performed in spring, and if it fail, the ordinary method may be resorted to in summer. Budding is also sometimes performed by taking a tube of bark with one or more buds from a small branch and placing it upon a branch of similar thickness in the stock, from which the bark has been removed.

BUDDLE, n. *bŭd' dl*: among *miners*, a wooden frame used for washing ore: V. to wash ore. **BUDDLING**, imp. *bŭd' dling*. **BUDDLED**, pp. *bŭd' dld*.

BUDDLEA, *bŭd' lĕ-a*: genus of shrubs of the nat. ord. *Scrophularineæ*, of which many species are known, all natives of the warmer parts of the world, and some of them admired for their beautiful flowers. *B. Neemda* is praised as one of the most beautiful plants of India. *B. globosa*, native of Chili, with downy branches, lanceolate leaves, and globose heads of orange-colored flowers, is hardy enough to endure the climate of most parts of England, where it has become a common ornament of gardens.

BUDE: small but growing watering-place on the n. coast of Cornwall, Eng., 18 m. n.w. of Launceston. The cliffs are grand, and the country around is interesting.

BUDE BURNER—**BUDE LIGHT**, *bŭd*: so called from the name of the residence of the inventor, Mr. Gurney. The burner consists of two, three, or more concentric argand burners, each inner one rising a little above the

BUDGE—BUDWEIS.

outer. On the same principle, a powerful light is produced by a number of flat flames disposed in concentric circles like the petals of a rose.

The BUDE LIGHT depends upon introducing oxygen into the centre of the flame instead of air, as in the common argand. A light of dazzling brilliancy is thus produced.

BUDGE, *v.* *bŭj* [F. *bouger*, to move—from It. *bulicārē*; mid. L. *bullicārē*, to bubble often: Bret. *boulj*, movement: Icel. *bullt*, frequent motion]: to move off a place; to stir. BUD'GING, *imp.* BUDGED, *pp.* *bŭjd*. BUD'GER, *n.* one who.

BUDGE, *n.* *bŭj* [Russ. *push'*, fur-skins; *pushit'*, to line with fur]: dressed skin or fur of lambs, formerly used as an edging or ornament, especially of scholastic habits: **ADJ.** in *OE.*, solemn, like a doctor in his fur; stern. BUDGE-BACHELORS, a company of men dressed in long gowns lined and trimmed with budge-fur, who formerly accompanied the lord mayor of London in his inaugural procession. BUDGE-BARREL, *n.* a small barrel with one head, the other having a loose leathern cover, used in carrying powder in a siege.

BUDGET, *n.* *bŭj'ět* [F. *bougette*, a leather bag: It. *bolgetta*, a leathern bucket—from *bulga*, a skin]: a bag with its contents; a stock or store or compact collection of things. 'Water-budgets' or buckets were a very honorable blazon on a coat-armorial, as being generally conferred in honor of some valiant feat for supplying an army with water.

The term, 'The Budget,' is in Britain, from long usage, applied to the annual financial scheme of the British nation, a miscellaneous collection of matters which aggregate into the yearly statement to parliament by the chancellor of the exchequer. It contains two leading elements—a statement how the nation's account of charge and discharge stands in relation to the past, and an explanation of the probable expenditure of the ensuing year, with a scheme of the method in which it is to be met, whether by the existing or new taxes, or by loan. The statement of the budget is always an important, sometimes an exciting, occasion.

BUDHA'NUH: town of India, in the British dist. of Mozuffnuggur, N.W. Provinces, on the route from Kurnoul to Meerut, 43 m. s. from Kurnoul. The surrounding country is wooded and well cultivated, and the lazaar of the town is well supplied. Pop. about 10,000.

BÜDOS HEGY, *bü-dŏsh' hěj*: mountain belonging to the Carpathians, on the e. border of Transylvania; lat. 46° 12' n., long. 25° 40' e. It is quite isolated, steep, and of conical shape, densely wooded on the lower slopes, and has an elevation of 7,340 ft. It has numerous caverns, that emit sulphurous exhalations, and from its base issue strong sulphur springs.

BUDWEIS, *bŏd'vīs*: town of Bohemia, on the Moldau, about 77 m. s. of Prague. B. is well built, is partially fortified, and has an old cathedral, manufactures of woollens, stoneware, machines. lead-pencils, saltpetre, etc. It

BUENA VISTA—BUENOS AYRES.

has also a brisk trade in grain, wood, coals, and salt. There are numerous schools, for education in the Bohemian and in the German tongue. The Slavic name of B. is *Budejowice*. In the neighborhood is an old feudal fortress, the *Schloss Frauenberg*, one of the seats of Prince Schwarzenberg, and a fine new Gothic castle also belonging to the same nobleman. Here he keeps herds of wild swine for the chase. Pop. (1900) 39,328.

BUENA VISTA, *bū'na vis'tā*: small settlement on the San Juan river, in the state of Coahuila, Mexico; 90 m. s.w. of Monterey, 10 m. from Saltillo. It consists, for the most part of mountainous ridges, defiles, and ravines. The place has a general interest from the fact that a battle was fought here, 1847, Feb. 22, 23, between United States forces under Gen. Taylor and Mexican forces under Gen. Santa Anna. The latter had 20,000 men, while the former had only 5,200 a large portion of whom were raw volunteers. After two days' sharp fighting Santa Anna was defeated with a loss of about 2,000; Taylor's loss being only 267 killed and 479 wounded and missing. The result was due mainly to the superior effectiveness of Taylor's artillery. This action is sometimes called the battle of La Angostura, from the name of a pass occupied by a detachment of Taylor's army at the beginning of the battle, 1½ m. n.e. of Buena Vista.

BUEN AYRE, *buēn ā'rā* (Spanish), or **BON AIR**, *bōng ār* (French): island in that subdivision of the West Indies which runs parallel with the coast of Venezuela; lat. 12° 20' n., long. 68° 27' w., 30 m. e. of Curaçao, which, like B. A., belongs to the Dutch. B. A. produces cattle and salt. It measures 20 m. by 4, and has a moderately good harbor on its leeward or s.w. side. Pop. abt. 4,000.

BUENOS AYRES, *bō'nūs ā'rīz*: province of the Argentine Confederation in S. America, of which the city B. A. is capital; extends along the Atlantic, from the mouth of the Plata to that of the Rio Negro on the 41st parallel; on the n.e. it is washed by the Plata and the Parana as far as the Arroyo del Medio; on the n. and the adjacent section of the w. it touches the province of Santa Fé. Elsewhere its borders cannot be defined, constantly advancing, by slow and perilous steps, into the domain of the aborigines, for here the contest is not with the wilderness itself, which is a boundless prairie, but with its tenants, who, having an unlimited supply of horses for all purposes, are secured in their every foray alike against famine and fatigue. The area is reported at 117,777 sq. m. Besides the existing province of the name it at one time comprised Uruguay or Banda Oriental, Paraguay, Bolivia, and the Argentine Confederation, being originally an appendage of Peru, under the immediate command of a capt.gen., and becoming, 1775, a separate vice-royalty of itself. Though the first three of these four divisions broke off chiefly in connection with the revolutionary struggle, yet the fourth continued, till 1853, to recognize the city of B. A. as its head; and the inland states endeavored both by war and

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diplomacy to re-annex the maritime province to the republic, till 1860, June, their object was obtained, and B. A. became once more a province in the Argentine Confederation.

The country is so nearly to a plain, that most of the rain which falls is either absorbed or evaporated, or lost in salt-lakes, comparatively little drainage entering the Parana or the Plata. The climate, though on the whole healthful and agreeable, is yet not steady or uniform. Every wind, in general, has, to a remarkable degree, its own weather—sultriness coming from the n., freshness from the s., moisture from the e., and storm from the w.; and, besides the periodical heats of every summer, successive years of more than ordinary drought occur. Agriculture, properly so called, is followed chiefly in the more temperate and humid districts of the e. coast; while the interior presents almost uninterrupted pasturage to countless herds of horses and cattle. Under these circumstances the business of grazing and hunting combined occupies or interests the great bulk of the population—a business that renders the province, whether as to the disposal of its productions or as to the supply of its wants, peculiarly dependent on that external commerce, which, throughout Spanish America, has naturally been identified with political freedom. As the Indians are intractable, and the Africans, few in number, are principally menials, immigration from Europe has been not only tolerated by public opinion, but also encouraged by legislative enactment, in spite of national jealousies and sectarian prejudices. Moreover a comparatively congenial climate, as a recommendation to foreigners, has powerfully seconded the efforts of liberality and patriotism. It is perhaps mainly owing to this cause, common to Chili and to B. A., that these two districts, notwithstanding their full share of wars and troubles, have so decidedly outstripped the other fragments of the same colonial empire in all the elements of liberty and civilization. Hence their higher importance in the eyes of Europeans in general, and of Englishmen in particular. B. A. is the largest, most populous, and most flourishing of the provinces which comprise the Argentine Confederation. Numerous railways traverse it, emanating from the city of B. A., and extending to other parts of the republic. B. A. had (1888) 9,602,274 horned cattle, 1,855,426 horses, 55,397,881 sheep. Pop. (1900) 1,140,067.

BUENOS AYRES: city of S. America, cap. of the province of B. A.; on the right bank of the Plata, which here, 150 m. from the open sea, is 36 m. across; lat. 34° 36' s., long. 58° 24' w. Its disadvantages as a maritime town are great, the flood-tides of the ocean, when backed by easterly winds, being apt to make the estuary overflow its banks; and again, when westerly winds prevail, the estuary loses both width and depth. Monte Video, on the opposite shore, has a better harbor and is nearer to the Atlantic, and would have been a successful rival except for the greater facilities of B. A. for inland trade. Steam is rapidly placing both on terms more nearly equal.

Of the trade, however, with Chili by Mendoza and the Andes—which must always be carried on by land—B. A. must still command the monopoly. So familiar had B. A. become with land-carriage on an extensive scale, that its merchants, when blockaded in front during a war with Brazil, established, as it were, a new port of entry in the mouth of the Salado or Saladillo, at a distance of at least 150 m. As a city, B. A. labors under some peculiar disadvantages. Its supplies of fresh water are received from the Plata in rudely constructed carts, though a thorough scheme of water-supply and drainage is now being carried out. Its immediate territory, purely alluvial, is almost as destitute of timber as of stones—the latter being brought either as ballast from Europe, or as freight from Martin Garcia, an island on the opposite side of the estuary, and the former from the province of Entre Rios and from the islets of the Uruguay and the Parana. Fuel is almost as scarce as building material—peach-trees and the withered thistles of the prairies yielding the only indigenous supplies. B. A., appears to deserve its name of *good airs*. About a third of the people are of European birth or descent. Among the Europeans the vast majority are Spanish, Italian, French, and British. B. A. has newspapers in French, English, Italian, and German, as well as in Spanish. The city is divided into blocks of about 150 yards square, by granite-paved streets. New houses are everywhere springing up; tramways traverse it in every direction; and the value of property has enormously increased. The principal buildings are the cathedral and its dependent churches, Episcopalian and Presbyterian chapels, a foundling hospital, an orphan asylum, the university, a military college, several public schools, and the government offices; there are also printing establishments and manufactories of cigars, carpets, furniture, and boots and shoes. The exports consist of precious metals, hides, beef, wool, skins, tallow, and horse-hair; and the imports of cottons, linens, woollens, jewelry, perfumery, and deals. The imports have an annual value of \$40,000,000; exports, about \$55,000,000. About 44 per cent. of the exports of the country pass through the city; the bulk going to Great Britain, Germany, France, and Belgium. A Continental Exhibition was held at B. A. 1882. B. A. was founded 1535; but was twice destroyed by the Indians. In 1806, to the glory of B., a British force, which had just captured the city, was obliged to surrender; and in 1807, another, which attempted to recover the place, was repulsed with heavy loss; and these successes over so formidable a foe emboldened the colonists, three years afterward, to throw off the yoke of Spain Pop. (1901) 836,381.

BUFF, n. *bűf* [F. *buffle*, the wild ox or buffalo—from mid. L. *bufălus*—from *bu'bălus*, a buffalo: Russ. *buivol*: It. *buffalo*]: a sort of soft leather prepared originally from the skin of the buffalo; a color near to yellow; yellow substance on blood in inflammation: ADJ. of the color of buff-leather, or made of it. BUFFS. a regiment of soldiers, so

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called from their buff-colored facings. **BUFFY**, a. *-fī*, pertaining to the color on the surface of blood; resembling buff. **BUFFY COAT**, or **BUFF**, a grayish or colorless crust appearing on blood drawn from the body in inflammatory diseases, or normally on blood drawn from the horse and many other animals.

BUFF, n. *bŭf* [Low Ger. *buffen*, to strike: OF. *bufer* or *buffer*, to strike: It. *buffetto*, a cuff]: in *OE.*, a blow: *V.* to strike: see **BUFFET** 1.

BUFFALO, *bŭf fa-lō*: city, cap. of Erie co., port of entry, railroad and commercial centre; in population and wealth, second city in N. Y.; lat. 42° 53' n., long., 78° 55' w.; on Lake Erie, Niagara and Buffalo rivers, and the Erie canal; 352 m. w. of Albany, 422 m. w. by n. (by rail) of New York; area 42 sq. m. The city has an exceptionally advantageous location for large commerce, with water-front of 5 m. on Lake Erie and Niagara river, one of the best and most commodious harbors on the lakes, formed by the Buffalo river, and a second, outer, harbor at the entrance to the same river, which is being improved by the U. S. govt. The inner harbor is protected by a masonry sea-wall and breakwaters on the n. and s. sides of the river; and the outer harbor is designed to have a breakwater of crib-work, 7,600 ft. long, running parallel with the shore, and a shore-arm of piles and crib-work, 4,100 ft. long, running out toward the s. end of the main breakwater, leaving an opening of 150 ft. between them. To 1889, June 30, the aggregate appropriations for the improvement of the harbor by U. S. engineers were \$2,191,480; and the n. and s. piers, sea-wall, 870 running ft. of pile-pier, and 6,355 ft. of breakwater, had been completed. It was then estimated that \$892,000 would be required to complete the work. The city in the main is on high ground, the surface rising gradually from the lake-front for about 2 m., and terminating in an undulating plain 50 ft. above the harbor-level; while the portion on the river-front is a bold bluff 60 ft. above the level of the river, and of the Erie canal, which passes near it. It is handsomely laid out, with broad, well-paved, thoroughly sewered, and brightly lighted streets, generally intersecting each other at right angles; commands a grand view of the harbor, river, lake, and Canadian shore; has a superb system of public parks, designed by Frederick Law Olmsted, who laid out Central Park in New York. The total area of the several parks and pleasure-grounds is 512 acres, exclusive of the broad boulevards and park approaches. The park system includes 12 small squares, circles, or public places, scattered widely through the city. The smallest, yet the most prominent, of these is Lafayette square, in the centre of which stands the Soldiers' and Sailors' Monument, built at a cost of more than \$50,000. That portion of the system known as The Front is situated on a bold bluff, overlooking the Niagara river and also commanding a magnificent view

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of Lake Erie. The Parade is in the e. part of the city; and both this and the Front are connected by broad boulevards with the main park, which comprises 362 acres, in the n. part of the city. It contains an ornamental lake of $46\frac{1}{2}$ acres, lying in a fine natural basin, about 25 ft. below the bluffs on either side. The foot-paths around the lake aggregate $3\frac{1}{2}$ m. The present park system, which extends around three sides of the city, was established and the work of construction begun 1870. The total cost for land and improvements has been about \$1,650,000, and the average yearly cost of maintenance is about \$40,000.—Buffalo derives its water supply from the Niagara river, through a long and costly tunnel, and by large pumping-engines with a capacity of about 55,000,000 gallons per day. The system of water-supply had cost up to 1903, Jan. 1, \$9,424,404.—The principal streets are Main, Niagara, Delaware, Genesee, Broadway, and Seneca streets; and there are a great many beautiful residences, with picturesque environments.

The temperature of B. does not reach as high as that of other lake cities, but the amount of moisture is greater; yet, though the moisture is frequently excessive, the heat is quite uniform. Spring is generally later than at other lake stations, but the cold waves of early winter are felt much less severely here. In 1889 the highest temperature was 89° (May 10), and the lowest 10° below zero (Feb. 24), showing a yearly range of 99° . The total precipitation of rain, melted snow, and sleet was 40.07 in., an excess of 3 in. when compared with the averages.

The most prominent building is the City and County Hall on Franklin street, built of Maine granite, in the form of a double Roman cross, with a tower 245 ft. high, cost more than \$2,000,000. Other notable structures are the State Insane Asylum, on a tract of more than 200 acres adjoining Buffalo Park, with a frontage of 2,700 ft. and capacity for 600 patients, cost \$3,000,000; U. S. Custom-house and Post-office, on the corner of Washington and Seneca streets, a large, plain, freestone edifice; State Arsenal, on Broadway, a heavy turreted brick and stone structure; State Armory, on Virginia st., plain brick; Erie Co. Penitentiary; General Hospital, on High st.; Music Hall, on Main st.; Buffalo Orphan Asylum, on Virginia st.; Y. M. C. A. hall and library; Buffalo Library; Merchants' Exchange; Rom. Cath. and Prot. Episc. cathedrals; 9 theatres; and 4 public markets.

In 1889 the manufactories had increased to 2,500, with more than 50,000 hands, and a correspondingly enlarged capital. There were 34 grain elevators, with a capacity of 13,410,000 bushels; 5 transfer towers, capacity 65,000 bushels; and 5 floaters—representing an estimated cost of \$8,000,000, and a daily transfer capacity of 4,000,000 bushels. There were 9 flour-mills in the city, with a capacity of 4,100 barrels daily, 7 of which (2 not running) produced 720,414 barrels; and 8

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mills outside the city, with daily capacity of 5,850 barrels, and product 846,295 barrels—total 17 mills, capacity 9,950, product 1,566,709, barrels. Extensive docks, with capacious pockets for handling coal for home and export trade, have been erected recently by the Central Dock and Terminal Co., and the New York Lake Erie and Western, Lehigh Valley, and Delaware Lackawanna and Western railroad companies, making the total average shipping capacity of the docks 27,500 tons daily, and of the pockets 36,300. Large stocking plants have been erected just outside the city limits by various R. R. co's.

The commerce of B. was promoted 1902 by 27 railroads, connecting B. with all important parts of the United States and Canada, and by a great flotilla of steam and sailing craft, plying to all distributing points on the great lakes. During the year ending 1902, Dec. 31, the imports of merchandise at the port of B. aggregated \$5,836,930, and the domestic and foreign exports combined, \$16,553,760, and imports of coin and bullion \$9,254. Entrances (1899), 920 vessels of 124,867 tons, of which 240 vessels were American and 680 foreign; clearances, 900 vessels of 120,260 tons, 246 American and 654 foreign. There were 266 vessels of 132,499 tons registered and licensed at the custom-house. The largest amount of imports came from Canada, next Great Britain, then France. The above entrances and clearances were exclusive of vessels engaged in the coastwise trade only, of which 3,625 of 3,334,479 tons entered, and 3,640 of 3,331,308 tons cleared. The receipts by lake, canal, and railroad 1889 included: flour 5,489,164 barrels; wheat 26,067,373 bushels; corn 47,128,850; barley 1,474,570; rye 1,906,760; lumber 401,682,278 ft.; timber 24,477,900 cubic ft.; coal 6,559,397 tons; cattle 740,490 head; hogs 2,562,463; sheep 1,484,200; and horses 25,560. The shipments included: wheat 15,318,376 bushels; corn 20,897,366; barley 682,499; rye 1,220,294; lumber 283,098,058 ft.; timber 96,212 cubic ft.; coal 2,168,343 tons (railroad shipments not reported); cattle 724,003 head; hogs 2,040,996; sheep 1,204,605; and horses 21,255.

The railroad-yard facilities of B. were reported 1889 the greatest in the world. There were 436 m. of track, with more than 200 m. more projected. The railroads centring there owned 3,600 acres in and immediately outside the city, and represented a direct trackage of nearly 11,000 m. of road, or, with sidings, second, third, and fourth tracks, nearly 25,000 m. The principal roads were: the New York Central and Hudson River, the New York Lake Erie and Western, the West Shore, the Lake Shore and Michigan Southern, the New York Chicago and St. Louis, the Delaware Lackawanna and Western, the Lehigh Valley, the Michigan Central, the Western New York and Pennsylvania, the Buffalo Rochester and Pittsburg, and the Grand Trunk of Canada. With branches, connecting terminal, and Buffalo Creek transfer, there were 27 in all. The main line of

the Michigan Central enters B. *via* Canada over the International and Cantilever bridges, and the Grand Trunk of Canada *via* Niagara Falls over the Suspension-bridge.

In 1890, there were 3,565 manufacturing establishments, employing 51,433 hands, using capital \$70,707,145, paying wages \$25,495,833, using materials valued at \$7,061,320, and yielding products valued at \$100,052,208. The chief industry (1890) according to capital employed was the manufacture of foundry and machine-shop products, which had 63 establishments, employed capital \$7,939,066, paid wages \$2,509,105, materials \$760,126, and received \$7,334,748 for products. Next were malt liquors, 19 establishments, capital \$5,357,413, wages \$439,343, materials \$313,684, and products \$3,274,376. Then followed malt, 22 establishments, capital \$3,299,195, wages \$270,125, materials \$253,040, products \$3,614,835; planed lumber, 29 establishments, capital \$2,882,448, wages \$1,125,836, materials \$713,644, products \$3,918,819; slaughtering and meat-packing, 6 establishments, capital \$2,545,560, wages \$366,313, materials \$56,760, products \$7,719,970; illuminating and heating gas, 3 establishments, capital \$2,501,441, wages \$118,306, materials \$29,580, products \$738,538; leather, 8 establishments, capital \$2,009,816, wages \$312,438, materials \$210,078, products \$2,390,400, etc. In 1900 the manufacturing establishments numbered 3,902, employed \$103,939,655 capital and 43,422 hands; paid \$19,915,817 for wages and \$73,359,466 for materials, and had products aggregating in value \$122,230,061.

Official reports of the school year 1894-5 showed: children of school age (5-21 years) 72,151, enrolled in private and parochial schools 18,952, in public schools 46,665; average daily attendance in public schools 31,093; public-school buildings 68; male teachers 3, female 919; total value of school property \$2,596,115; receipts of year: state \$130,713, city \$914,688, from other sources \$4,602, total \$1,050,003; expenditures: permanent \$490,691, salaries of superintendents and teachers \$633,513; current and incidental expenses \$135,875, for evening schools \$10,901, total expenditures \$1,270,980; and total available funds \$1,622,636. The state normal school, founded 1871, had (1894-5) 23 instructors; enrolled students, male 254, female 395; children in model school, male 200, female 211; value of grounds and buildings \$254,850; amount of state, city, or county aid \$25,807.

There were (1894-5) six institutions for private secondary instruction, of which the more important are the B. Seminary (non-sect.) with 15 instructors, 219 students; Holy Angels Acad. (Rom. Cath., opened 1861), 5 instructors, 250 students. There was also B. Law School, Univ. of B., with 25 professors and instructors, 98 students; Univ. of B. Medical School, 30 professors, 325 students; and the Medical Dept. of Niagara Univ., 29 professors, 78 students. B. has several free and reference public libraries, containing about 200,000 vols. Of these the B. Public Library (established 1836), nearly 60,000 vols., and the Grosvenor Public (refer-

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ence, established 1869), about 35,000 vols., are the largest. There were (1894-5) also 72 daily, tri-weekly, weekly, and monthly publications.

The net public debt (1903, March 1) was \$16,039,583; total assessed valuation \$243,905,620; tax rate \$1.72 on \$100 of assessed valuation. There were 1 national bank (cap. \$500,000), 10 state banks (cap. \$2,050,000), 3 savings banks, 1 incorporated bank (cap. \$900,000), 1 loan and trust company (cap. \$137,000), 2 joint-stock fire insurance companies (assets \$1,546,065, liabilities \$387,498), and 1 mutual fire insurance company (assets \$189,604, liabilities \$33,628).

B. was founded 1801; made a milit. post early in 1813, and burnt by the British Dec. 31 following; rebuilt rapidly after the war; attained commercial importance first on the completion to it of the Erie canal 1825; and was incorporated as a city 1835. In 1889 it had 60 m. of street railroad, with 50 m. more under construction; 120 m. of streets paved with stone, and 63 m. with asphalt; and had 250 passenger trains arriving and departing daily. Besides manufactured gas and electricity, the city uses a large amount of natural gas.

Pop. (1813) 200; (1820) 2,093; (1830) 8,653; (1840) 18,200; (1850) 42,300; (1860) 81,130; (1870) 117,714; (1880) 155,134; (1890) 255,664; (1900) 352,218.

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BUFFALO, n. *bŭf'fă-lō* [Sp. *búfalo*, a buffalo: OF. *buffle*, the bugle or wild ox: Gr. *bou'balos*—from *bous*, an ox (see **BUFF** 1)], (*Bos Bubalus*): animal of the ox tribe. **BUFFLE-HEADED**, a. *bŭf'fl-héd'éd*, having a large head like a buffalo; dull; stupid. The buffalo is a native of the East Indies, where it has been long domesticated, whence it was carried to Egypt and to the s. of Europe. It was introduced into Italy about the close of the 6th c., and is now generally used as a beast of draught and of burden in that country, as also in India.

The B. is larger than the ox, and its limbs are stouter. Its form is more angular and clumsy; the head is larger in proportion to the size of the body; and the forehead is rather convex, and higher than broad; the dorsal line rises into a considerable elevation above the shoulders; the dewlap and the tail resemble those of the ox; the horns are large, slightly compressed, recline toward the neck, and have their points turned up. It is characteristic of the B., when walking or running, to carry the head with the muzzle projecting straight forward, and the horns laid back on the shoulders. The hair is irregular and bristly, often very thin, so that the smooth brown hide 'shines with an unpleasant polish in the sunlight.' In this, as in other respects, the animal is adapted for marshy situations, which it naturally affects; preferring for its food the rank, coarse herbage which they afford, delighting to immerse itself in water till only its head appears above the surface, in which condition it will remain for hours, and often enveloping itself in mud as a protection against insects. On account of these propensities, the buffaloes used as beasts of burden in India are seldom laden with any goods liable to be spoiled by water, as the animal is always ready to take an opportunity of lying down with his load in any river or pond which presents itself. In Italy, the B. seems nowhere more at home than in the Pontine Marshes and the pestilential Maremma. The regions where malaria is most prevalent seem most adapted to its constitution.

The B. is much more powerful than the ox, and capable of dragging or carrying a far heavier load. The female yields a much greater quantity of milk than a cow, and of excellent quality. It is from B. milk that the *ghee* or semi-fluid butter of India is made. The hide is greatly valued for its strength and durability, but the flesh is very inferior to that of the ox.

The B. exhibits considerable intelligence. In domestication, it is capable of becoming very docile. In the s. of Europe, it is generally managed by a ring passed through the cartilage of the nose, but in India by a mere rope. The Indian driver rides upon a B.; but these animals keep so closely together as they are driven along, that, if necessary, he walks from the back of one to that of another perfectly at his ease. In a wild state the B. is savage and dangerous, and even in domestication it is apt to resent injury. The native princes of India make buffaloes and tigers fight in their public shows, and the B. is more than a match for the

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tiger, even in single combat. The appearance of a tiger excites a herd of buffaloes, much as we see oxen excited by the approach of a dog; and if his safety is not secured by flight they kill him, tossing him from one to another with their horns, and trampling him with their feet.

The B. is used in some parts of the east as an aid in the shooting of waterfowl, being trained to the sport, and sold at a considerable price. The sportsman conceals himself behind the B., which, being a familiar sight, is not alarming to the birds.

The CAPE B. (*Bos Caffer*) is generally regarded as a distinct species. It seems never to have been reduced to the service of man, although there is reason to believe it quite capable of domestication. The horns are very large; they spread horizontally over the top of the head, and are then bent down laterally, and turned upward at the point. The head is carried, as by the common B., with projecting muzzle and reclining horns, but the bases of the horns nearly meet on the forehead, where they are from eight to ten inches broad. The length of a full-grown Cape B. is about 8 ft. from the root of the horns to the tail, and the height $5\frac{1}{2}$ ft. This is the most formidable animal in s. Africa; and the hunter will more readily risk an encounter with a lion than offer provocation to a B. without great advantages for the combat, or great facilities for escape. The B. is still found in large herds in the interior of s. Africa, but in Cape Colony, where it was formerly plentiful, it is now comparatively rare. The hide is so thick and tough that the Kafirs make shields of it, impenetrable to musket-shot; and the balls used by the huntsmen in shooting the animal are mixed with tin, and yet are often flattened by the resistance. The Cape B. grazes chiefly in the evening, and lies in woods and thickets during the day.

An attempt has been made to establish a genus, *Bubalus*, having the common B. for its type; but the characters lack precision, and the limits are uncertain.

The *Buffalo* of the Anglo-Americans is the American Bison: see BISON.

BUFFALO-BERRY: a plant, *Shepherdia argentea*.

BUFFALO-BUG, CARPET-BEETLE or CARPET-BUG: a dermestid beetle (*Anthrenus scrophulariæ*) whose larva is hairy along the sides. It is very destructive to carpets and woolen fabrics.

BUFFER, n. *büſfër* [OF. *bufer* or *buffer*, to strike (see BUFF 2)]: apparatus at the ends of railway carriages, which when driven in, spring out again, and so prevent injury to the carriages when they come into contact; any cushion-like article to take away the force of a blow; a contemptuous epithet applied to a man or boy. BUFFER-HEAD, n. in railway carriages, the part of the buffer apparatus which receives the concussion. *Note*.—In the sense of a jovial companion, *buffer* is probably a corruption of F. *buffetier*-man, or *buffet*-man.

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BUFFER, n. *bŭf'fēr* [OF. *bufer*, to puff out the cheeks]: in *OE.*, a stammerer; a foolish fellow: see **BUFFER** 1.

BUFFET, n. *bŭf'fēt* [OF. *bufe*, a blow, especially on the cheek: Ger. *puff*, a clap, a cuff (see **BUFFER** 1)]: a blow with the fist; a box; a slap: V. to strike with the fist or hand; to box or beat; to contend against. **BUF'FETING**, imp. **BUF'FETED**, pp. **BUF'FETER**, n. one who.

BUFFET, n. *bŭf'fēt* [F. *buffet*, primarily, the tap of a tavern, then a sideboard]: a cupboard or set of shelves for crockery; a sideboard on which the drinkables are placed at meals. In France, a refreshment bar.

BUFF LEATHER: usually made out of salted and dried S. American light ox and cow hides. After being limed in the usual way, they are unhaired and rounded, so that only the best part of the hide is made into buff leather. The grain and flesh being then scraped or cut off, the true cuticle, which is of a flexible fibrous nature, alone remains. The hide is next sprinkled over with cod-oil, and placed in the *stocks*, where it is worked for about 15 minutes. Having been taken out and partially dried, it is again submitted to a similar process of oiling and stocking; and during the first day, these operations may be repeated six times, decreasing daily for about a week, when one oiling and stocking in a day is sufficient. The hides are then placed in a stove, and subjected to a process called 'heating off,' after which they are scoured and rendered free from oiliness by being soaked in a strong lye of carbonate of potash. They are next worked well in the stocks, hot water being poured copiously upon them until the water runs off pure. Having been dried, they are subjected to a process called *grounding*—i. e., they are rubbed with a round knife, and also with pumice-stone and sand, until a smooth surface is produced. The leather, which is very pliant, and not liable to crack or rot, is now ready for the market. The natural color of the leather is light-yellow, but for some purposes it is bleached white. The precise chemical operation of the oil in the process of the manufacture is rather obscure, but as no glue can be got from the hide that has been made into buff, the gelatine of the hide must have entered into combination with some of the constituents of the oil, and had its nature completely changed.

BUFFON, *bŭf'un*, Fr. *bŭ-fōng'*, GEORGE LOUIS LECLERC, Comte de: 1707, Sep. 7—1788, Apr. 16; b. Montbard, Burgundy: famous naturalist and writer. He turned from the law which he had studied at the college of Jesuits at Dijon, and applied himself to astronomy and mathematics, and afterward to zoology. He travelled through France and Italy, and came to England, where he translated Newton's *Fluxions* and Hales's *Vegetable Statics*. In 1733, he wrote several original essays. His general love of science received a definite impulse toward zoology by his appointment, 1739, as intendant of the royal garden and museum. Hitherto zoology, consisting of a series of unconnected observations and fruitless attempts at classification, had been commonly regarded by educated readers as a dry study, and

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by savans as play-work. B. first conceived the idea of making it attractive to the first of these classes, while securing for it the respect of the second. His plan was comprehensive enough, since he aimed at nothing less than a collection of all the separate known facts of physical investigation, and a systematic arrangement of these, to assist the author in forming a theory of nature; but B. had neither the science nor the patience for such a task. Endowed, however, with a brilliantly rhetorical imagination, and always inclined to deliver himself from doubts and ignorance by sparkling hypotheses, the elaboration of which cost him little trouble, he produced a work which, though not severely scientific in its method, shone with what was deemed the brightest literary lustre. And indeed many of his views are very ingenious, though later researches have shown them fallacious. The *Natural History* of B. made an epoch in the study of the natural sciences, though it has now little or no scientific value. His attempted explanations of natural phenomena were opposed by Condillac, who, with Helvetius, Diderot, D'Alembert, and others, ridiculed, with a certain degree of justice, the excessive pomp of B.'s style. The most insignificant part of B.'s treatise is the mineralogy, for which his knowledge was utterly inadequate. The systematic and anatomical arrangement of the mammalia was executed by his colleague Daubenton. B.'s works passed through numerous editions, and several were translated into most of the languages of Europe. The best complete edition is the *Histoire Naturelle Générale et Particulière*, 36 vols. (Par. 1749-88). After receiving several high honors, being elevated to the rank of Comte de B. by Louis XV., and treated with great distinction by Louis XVI., B. died in Paris. In person and carriage B. was noble; as a Parisian academician, and a self-complacent, theoretical naturalist, dressed in courtly style, pursuing his pleasant studies in the *allées* of the royal garden, and largely participating in the vices of his time, B. was a model of a French philosopher of the 18th century.

His son, Henri Leclerc, Comte de B., b. 1764, was attached, at the outbreak of the Revolution, to the party of the Duke of Orleans, and fell under the guillotine.

BUFFOON, n. *bŭf-fŏn'* [F. *bouffon*; Sp. *bufŏn*, a jester—from Sp. *bufa*, a scoffing: It. *buffa*, a trick; *buffare*, to puff, to blow hard: comp. L. *bŭfo*; Gael, *buaf*, a toad]: a droll who diverts a company with antic gestures; a man who amuses others by tricks, antic gestures, and jokes. In the corrupt Latinity of the middle age, *buffa* meant a slap on the cheek; and in the Italian, *buffare* signified the puffing of wind through the mouth. It is probably from the favorite trick played by clowns in farces—one swelling out his cheeks with wind, the other slapping them so as to make a ludicrous explosion—that the word is derived: V. to make ridiculous. **BUFFOON'ING**, imp. **BUFFOON'ERY**, n. *-ĕr-ĭ*, the tricks of a buffoon; low jests; drolleries. **BUFFOON'ISH**, a. **BUFFOON'ISM**, n. *-ĭzm*. **BUFFO**, n. *bŭf'fŏ*, the comic actor in an opera. A burlesque opera is called *opera buffa*, a burlesque play *commedia buffa*.

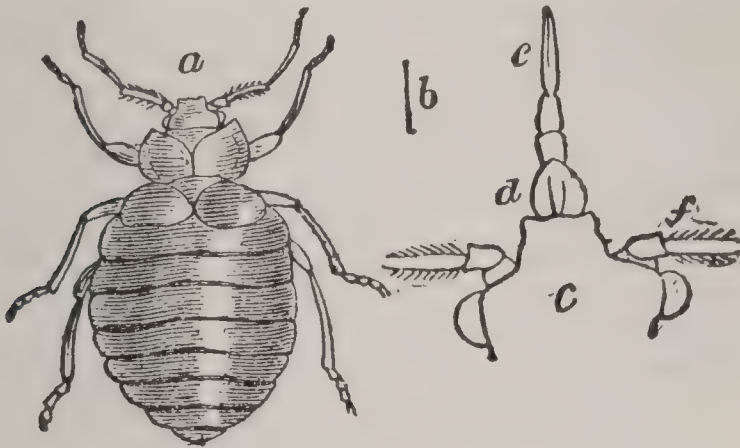
BUFORD—BUG.

In Italy, the *buffo cantante* is distinct from the *buffo comico*; the former having greater musical talent, and sustaining a more important part, the latter having greater license in jocoseness. The voice of a *buffo cantante* is generally a bass, but sometimes a tenor buffo is introduced.

BUFORD, *bū'ford*, JOHN, Major-General: 1826–63; b. Ky.; d. Washington. In 1848, he graduated at West Point, was brevetted, served in the expedition against the Sioux 1855, and in the civil commotions in Kansas 1856–7, etc. In 1862, he received the command of a brigade of cavalry, and led in many cavalry engagements—notably at Antietam, Fredricksburg, and Gettysburg.

BUG, n. *būg* [W. *bwcai*, what produces dread or disgust: W. *bwg*; Gael. *bocan*, a goblin, an evil spirit: Alb. *boube*; Russ. *buka*, a bugbear]: a ghost or other frightful object; a name applied to various insects; an offensive insect common in dirty dwelling-houses. BUG'GY, a. *-gī*, full of bugs. BUG'GINESS, n.

BUG: name including a large family of offensive in-



Bed Bug:

a, the insect, magnified; *b*, its natural length; *c*, the head, upper side; *d*, labrum; *e*, proboscis extended; *f*, base of antennæ—very highly magnified.

sects, *Cimicidæ*, of the order *Hemiptera* (q.v.), sub-order *Heteroptera*, and often further extended in its signification to include the whole of that sub-order, the insects of the section *Geocorisæ* being designated land-bugs, and those of the section *Hydrocorisæ*, water-bugs, the latter including water-scorpions, boat-flies, etc. In the United States the term B. is often improperly applied to almost all kinds of insects. All the insects of the sub-order above named, particularly the land-bugs, though some are radiant in beautiful colors, have strong resemblance in form and structure to the annoying and disgusting HOUSE B. or BED B. (*Cimex lectularius*). The statement that the B. was introduced into England with timber brought from America to rebuild London after the great fire of 1666, must be rejected as erroneous; for though it appears to have been rare in England, it was well known in some parts of Europe long before that time, and is mentioned by Dioscorides. The Bed B. is destitute of wings—an anom-

BUG.

alous peculiarity, as the insects of its order, and even of the same family, are generally furnished with them. The body is very flat, of a somewhat oval form; the whole insect is of a dirty rust color, emits an offensive odor, and is about three-sixteenths of an inch in length; the legs are moderately long, and capable of being employed for somewhat rapid motion; the antennæ are thread-like and very slender, about half the length of the body; the mouth is formed for suction alone, and is furnished with a sort of proboscis, which is three-jointed, forms a sheath for the true sucker, and when not in use is recurved under the head and thorax. The B. lurks during the day in crevices of walls, of bedsteads, and of other furniture, but is active during the night; and when it finds opportunity, sucks blood until it distends itself. It seems, however, to be capable of subsisting long without food. Young bugs resemble their parents in most things, except size and the want of *elytra*, insects of this order not undergoing such marvellous transformations as those of some other orders. The best preventive of bugs in a house is *scrupulous attention to cleanliness*. Where the nuisance exists, it is not easily removed, but one of the best and safest means is thorough washing with spirit of turpentine, though recourse is had to washing with a solution of the dangerous corrosive sublimate.—Other species of B. (*Cimex*) suck the blood of some of the inferior vertebrate animals, as pigeons, swallows, bats, etc.; but the greater number of insects of the B. family live by sucking the juices of vegetables. A small species (*Tingis pyri*), which sucks the leaves of the pear-tree, is very destructive in some parts of Europe, where it is popularly called the *tiger*. Some of these winged wood-bugs or field-bugs are capable of inflicting very painful wounds. Flying-bugs, ‘enormous and fetid,’ are among the pests of India. Night is the time of their activity. Warm countries generally have winged bugs of great size and beauty; but if touched or irritated, they ‘exhale an odor that, once perceived, is never after forgotten.’ A winged B., as large as a cockchafer, lodges in the thatch and roofing of houses in Chili, and sallies forth at night, like the Bed B., to suck blood, of which it takes as much as a common leech.—It is worthy of notice that a species of field-B. (*Acanthosoma grisea*), native of Britain, is one of the few insects that have been observed to show affection and attention to their young. De Geer observed the female of this species, which inhabits the birch-tree, conducting a family of 30 or 40 young ones as a hen does her chickens, showing great uneasiness when they seemed to be threatened with danger, and waiting by them instead of trying to make her own escape.

BUG, or BOG, *bóg*, EASTERN (the *Hypanis* of the ancients): river in Russian Poland, rising in Pedolia, flows s. into the estuary of the Dnieper; length more than 400 m. It is navigable for small-craft as far as Wosnessensk. At the junction of the Ingul with the B., is the city of Nicolajew (q.v.).

BUG—BUGENHAGEN.

BUG, or **BOG**, **WESTERN**: river in Russian Poland: largest tributary of the Vistula; rises in Austrian Galicia, and after a course of about 450 m., and receiving numerous tributaries, joins the Vistula at the fortress of Modlin, near Warsaw. It is navigable for a considerable distance.

BUGBEAR, *n.* *bŭg'bār* [*bug*, with *bear*, as an object of dread (see **BUG**)]: anything that scares or frightens, real or imaginary: *V.* to alarm or scare by any means. **BUG'BEARING**, *imp.* **BUG'BEARED**, *pp.* *-bārd*. **BUGABOO**, *n.* *bŭg'ā-bō'* [*bug*, with the addition of *W. bw*; Gael. *bo*, an interjection to frighten children]: in *OE.*, a spectre.

BUGEAUD DE LA PICONNERIE, *bŭ-zhō' dēh lā pē-kon-re'*, **THOMAS ROBERT** (Duc d'Isly), Marshal: 1784, Oct. 15—1849, June 9; *b.* Limoges, France. In his 20th year he entered the army as a private. His conspicuous bravery in the Prussian, Polish, and Spanish campaigns gained him rapid promotion. Shortly before the fall of Napoleon, B. was made a col., and in 1815 commanded the advance-guard of the army corps of the Alps. He afterward retired to his estate, but was called into public life by the July revolution of 1830. He was elected deputy for Périgueux, and gained the esteem of Louis Philippe, who created him a marshal. In 1835, he voted against electoral reforms and universal suffrage, denounced 'the tyranny of the press,' and made himself very unpopular. In December 1840, he was appointed gov.gen. of Algiers. He immediately set about organizing the celebrated irregular force known as the Zouaves, and in a few years the French arms were everywhere triumphant over the Arab tribes. The cruelty of some of B.'s proceedings excited strong feelings of reprobation in France and in Europe generally. In 1844, he gained a victory over the Emperor of Morocco's forces at Isly, for which he was created Duc d'Isly. In the revolution of 1848, Feb., Marshal B. had command of the army in Paris, and would have dissuaded the king from signing the act of abdication; but panic made such counsel useless. Among all the friends of Louis Philippe, B. seems to have been the only man who preserved firmness and presence of mind. When Louis Napoleon became president, he intrusted to him the chief command of the army of the Alps. B. died of cholera, in Paris.

BUGENHAGEN, *bō'kn-hā-kn*, **JOHANN**, surnamed *Pomeranus*, or Dr. Pommer: 1485–1558, Apr. 20.; *b.* Wollin, near Stettin, Pomerania; one of Luther's chief helpers in the Reformation. He studied at Greifswald, and as early as 1503 became rector of the Treptow Acad., where he lived quietly, fulfilling the duties of his office till 1520, when his religious views were changed by reading Luther's little book, *De Captivitate Babylonicā*. B. was now seized by the zealous spirit of the Reformation, and, to avoid the persecutions of the Rom. Cath. party, he betook himself to Wittenberg, where his talents procured for him in succession several high positions. B.'s remarkable philological and exegetical powers were of great

BUGGY—BUGLOSS.

service to Luther in his translation of the Bible. In 1525, he opened the controversy between Luther and Zwingli by a treatise against the latter, to which Zwingli ably replied. He had a superior talent for organization, establishing churches in Brunswick, Hamburg, Lubeck, and Pomerania. In 1537, he was called to Denmark by Christian III. to reform the ecclesiastical establishments of that country. He accomplished this so admirably, that the Danes to this day consider him their Reformer. In 1542, he returned to Wittenberg, and continued his energetic efforts to extend the new theology throughout his native land. His best work is his *Interpretatio in Labrum Psalmorum* (Nürnberg, 1523).

BUGGY, n. *bŭg'gĭ*: a light one-horse vehicle open at top; a gig.

BUGHIS, or BUGIS, *bó'jhēz*: Malay tribe whose chief abode is in the s.w. peninsula of Celebes; but during the present century, numbers have emigrated and established communities in Borneo, Sumatra, Singapore, and other places. They cultivate the arts of peace; have domesticated the sheep, ox, horse, and buffalo; built substantial houses and sailing vessels; and have skilled mechanics, who work in copper, iron, cotton, etc. Some are engaged in various fisheries; while their merchants carry on most of the trade in the neighboring seas. They have reduced their language to writing; have a calendar similar to ours; use the compass and charts in navigation; and have embraced the Mohammedan religion. Their government is an oligarchy which can depose the emperor at any time by an adverse majority.

BUGLE, n. *bŭ'gl* [a dim. of M.H.G. *bouc* or *bouch*, a large ring, an armlet: AS. *beag*, an armlet: Icel. *baugr*, a spiral ring (see BUCKLE)]: in *OE.*, a small ornament of a rounded shape; one of the fine glass tubes or beads sewed on ladies' dresses by way of ornament.

BUGLE, n. *bŭ'gl* [F. *bugle*, a bugle—from L. *bŭc'ŭla*, a heifer: mid. L. *buc'ŭlus*, a wild ox: F. *buffle*; It. *buffalo*, a wild ox]: a hunting-horn, formerly spelt *buffalo-horn*; a musical wind-instrument; (*Ajuga*): genus of plants of the nat. ord. *Labiata*, having an irregular corolla, with very short upper lip and trifid lower lip, the stamens protruding. The species are mostly natives of the colder parts of the old world. The Common B. (*A. reptans*) is abundant in moist pastures and woods. Its flowers are generally blue, but varieties occur with white and purplish flowers, often introduced into flower-borders. The Alpine B. (*A. alpina*) is one of the beautiful flowers of the Swiss Alps. BUGLER, n. *bŭ'glér*, in *mil.*, the soldier who gives signals on a bugle.

BUGLOSS, n. *bŭ'glŏs* [L. *buglossa*—from Gr. *bous*, an ox; *glossa*, a tongue]: popular name of many plants, generally mucilaginous and emollient, of the nat. ord. *Boraginæ* (q.v.), as the species of *Anchusa* or Alkanet (q.v.), etc. In some botanical works it is confined to the genus *Lycopsis*, a genus differing from *Anchusa* in little but the

BUHL—BUHRSTONE.

curiously-curved tube of the corolla. The beautiful genus *Echium* bears the English name of VIPER'S BUGLOSS.

BUHL, n. *bûl* [after *Boule*, a French carver in wood]: unburnished gold, mother-of-pearl, etc., used for inlaying in dark wood, etc. BUHL-WORK, inlaying wood, etc., with metal or mother-of-pearl or other substances in ornamental patterns. Its inventor, *Boule*, an Italian cabinet-maker, settled in France in the reign of Louis XIV. He employed veneers of dark-colored tortoise-shell, inlaid with brass. Cabinets of his manufacture are highly prized, as are those of his contemporary *Reisner*, a German, who used a ground of tulip-wood, inlaid with flowers, etc., in darker woods, and varied with margins and bands of light wood, with the grain crossed for contrast. This modification of buhl-work is correctly called *Reisner work*. See INLAYING: MOSAIC.

BUHREACH', or BHARAICH, *bhâ-râch'*: town of Oude, India; principal place of the dist. of B.; n. lat. 27° 34', e. long. 81° 33'; 65 m. n.e. of Lucknow. It is an old town, of considerable size, in a pleasant wooded plain, on the left bank of the Sarju. The houses are built mostly of mud and covered with thatch; but the mausoleums, mosques, and residences of merchants are of brick and lime-mortar. Northeast of the town is the tomb of *Selar*, a reputed Mussulman saint, to which there is a great concourse of pilgrims annually in the month of May. Pop. (1891) 24,046; of dist. 1,000,432.

BUHRSTONE, or BURRSTONE, n. *bér'stôn* [Gael. *borr*, to protrude, to swell: F. *bourre*, a stuffing: prov. Sw. *borre*, a fir-cone: OE. *bur*, a whetstone for scythes]: a variety of quartz (q.v.), containing many small empty cells, which give it a peculiar roughness of surface, adapting it for millstones. The name is given without reference to geological relations, but it is *vein quartz*, rather than true *quartz rock*, which ordinarily assumes the character of buhrstone. There are different varieties of B., some of which are more compact, or have smaller cells than others; and those in which the cells are small and very regularly distributed, about equal in diameter to the spaces between them, the stone being also as hard as rock-crystal, are most esteemed. Some of the best millstones are obtained from the quarries of La Ferté-sous-Jouarre, in the dept. of Seine-et-Marne, near Paris. A single millstone in one piece of 6 ft. diameter, sells for about \$250, and one formed of several pieces for about \$165. It is not unusual to form millstones of pieces of B. cut into parallelopipeds, like great wedges of soap, and bound together by iron hoops. The stone is found in beds or in detached masses, and the mode of quarrying is peculiar. When the mass is large, it is cut out into the form of a huge cylinder; around this, grooves are cut, at distances of about 18 inches, the intended thickness of the millstones; into these grooves, wooden wedges are driven, and water is thrown upon the wedges, which, causing the wood to swell, splits the cylinder into

BUILD—BUILDING.

the slices required.—Millstones are not always made of B., but sometimes of silicious gritstones, of sandstone, and even of granite. B. millstones are extremely durable.

BUILD, *v.* *bild* [Ger. *bilden*, to form, to fashion: old Sw. *byli*, a habitation; *bylja*, to raise a habitation: Gael. *baile*, a town or village]: to form or fashion; to construct; to make or raise anything—as a wall, a house, or a ship; to shape into a particular form; to raise on a foundation; to increase; to depend on as a foundation. **BUIL'DING**, *imp.*: N. an edifice; a fixed structure—as a house, a church. **BUILT**, *pt. pp.* *bilt*, or **BUILDED**, *pp.* *bild'ed*. **BUILDER**, *n.* *bil'dér*, one who erects buildings.—**SYN.** of 'build': to construct; erect; fabricate; frame; raise; establish; settle; rest; depend.

BUILD'ING: the art of constructing, applied usually to erecting edifices for habitation, business, or other purposes. The building trade includes many distinct lines. At the head is the architect, employed by the owner to design the building and make the working drawings and specifications of the work to be performed. The builder acts ministerially; the duty consists in carrying out the plans put into his hands according to certain stipulated terms. The profession of an architect demands much imaginative power and great artistic skill, with a practical knowledge of construction even to its smallest details. Endeavoring to realize the wishes of his client, the architect devises what shall be the external effect and the interior accommodation of the building, and portrays the whole with accuracy on paper. After the general designs, giving an idea of the proposed structure, have been approved, the architect furnishes the working plans and specifications, in which are shown or described all the materials and modes of construction to be used in the building, and which are intended to guide all the mechanics, in their several operations. These services of the architect involve much thought and labor and he usually employs assistants, by whom the plans are elaborated from his sketches and under his orders. The writing of the specifications is a matter of careful study, requiring acquaintance with the characteristics and qualities of all the materials involved in the structure, such as stone, lime, cement, sand, bricks, wood, iron, slate, etc., and their resistance to the strains to be imposed upon them. It is customary for the builder, or contractor, as he is often called, to sign a contract to erect the building according to the drawings and specifications, for a stated sum, by a given date, and under the supervision of the architect. During the execution of the work—unless a different arrangement has been made—the architect visits the building to see that it is being constructed according to the drawings and specifications. The architect also furnishes further full size and detail drawings of all moldings, etc., where requisite, as the work progresses. In large constructions where it is necessary to have an agent of the architect to look after the work all the time, a 'clerk of works' is appointed, who is paid by the client and daily reports to the architect the progress of the work. Until the

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building is finished the architect is paramount. For the due execution of his plans he feels that his professional reputation is at stake; and as he is responsible, the owner, if he wish any changes, should consult the architect and not the builder. Such is the etiquette of the profession. The payments to the contractor are made upon the certificate of the architect stating that a certain point in the construction, specified in the contract, has been reached. The customary charges for architectural services are five per cent. on the cost of construction, which are divided as follows: one per cent. for preliminary sketches, one and a half more for the working drawings and specifications, one for detail drawings, and one and one half for superintendence. The charges for designing furniture, interiors, etc., vary, ranging from ten per cent. up to as high, sometimes, as fifty per cent.

The builder, having signed the contract, generally sublets parts of it to different trades; for instance, the plastering, the outside and inside wood-work, the staircases, the bell-hanging, the heating, etc. There are some firms that furnish the entire wood-work of a house, including the frame and all outside wood-work, and the doors and windows and all inside wood-work; so that the builder has only to put them together.

In England, builders undertake work by 'contract,' or by 'schedule of prices.' If by contract, they engage to execute the whole works for a stipulated sum. If by schedule of prices, they agree to abide by the measurements of valuers appointed by the architects. These valuers go over the works when finished, and, taking an exact account of everything, compare it with the account rendered by the builder; the architect being the ultimate referee.

It is exceedingly important, for the sake of an amicable adjustment of accounts, that the builder adhere scrupulously to the letter of the specifications—i.e., the covenant under which he has become bound. He can justify no departure from the specifications, on the plea that something as good has been given or done, or that he was not checked at the time by the clerk of works. Being explicitly a person employed to do a certain piece of work, in a certain way, he is in no respect entitled to substitute his own notions for those of his employers.

The application of a comprehensive manufacturing system in the preparation of various parts of a building is observable particularly in certain establishments of great magnitude. The test is this—whether the builder conducts so large a trade as to warrant him in setting up a steam-engine of great power, and in providing highly wrought machines for cutting and otherwise treating wood, stone, etc. When this degree of magnitude is reached, the operations are conducted under great advantage. Thus the Crystal Palace, in Hyde Park, London, could never have been built at the stipulated cost, nor in the required space of time, but by the application of steam-power to work the machines which shaped and grooved the *two hundred miles* of sash-bars.

As an art, B. is of vast antiquity, and has assumed differ.

BUILDING.

ent forms. In ancient Egypt, Greece, and Italy, B. in stone rose to a high state of perfection, and till the present day it may be said that the greatest progress in the art is made only where stone of a manageable kind is conveniently at command. See BUILDING STONE. Rome, Paris, Lyon (with very many Italian and French cities), Bordeaux, Brussels, Munich, Geneva, Vienna, Edinburgh, and Glasgow are specimens of what may be achieved in stone work. able with the chisel; Aberdeen is built mainly of granite. On the other hand London, the greatest city within the bounds of civilization, is built of brick; so are Manchester and Liverpool; also Amsterdam, Rotterdam, and other towns in Holland; and in general it seems that wherever brick has to be resorted to, there the allied arts of architecture and building, as regards domestic accommodation and elegance of style, have less development. The great variety of very good building stones in this country gives opportunity for artistic color effect; but in the large cities great office-buildings, some of them 10 or more stories high, have been erected of brick with stone or terra-cotta trimmings. For the various processes in building, including the materials and the operations. see the respective titles.

BUILDING AND LOAN ASSOCIATION.

BUILDING AND LOAN ASSOCIATION: joint-stock assoc. in which the members by periodical subscriptions assist one another in purchasing homesteads. But such associations are rather mutual loan and accumulating fund societies than building societies; for they have nothing to do with building: they simply accumulate the periodical contributions of their membership, loan the money so accumulated to the members, receiving interest for the use, and, when the organization has fulfilled its purpose, distribute the fund, with its increment, among the members *pro rata* of their contributions. Building societies had their rise in England at the end of the 18th c., the first organization of the kind having been formed at Birmingham 1795, and called a building club, the object being mutual assistance among the members toward procuring homes. The first assoc. of this kind in the United States was founded in Philadelphia 1831, admittedly on the English model; it was called the Oxford Provident Building Assoc. At least two-thirds of the dwelling-houses of Philadelphia are owned by their occupants—mainly the result of the facilities afforded by the numerous building societies founded there. Other cities and suburban and manufacturing villages tardily began to follow this example, and such societies now exist in all sections of the United States, and their number is increasing rapidly.

A B. and L. A. is organized on the basis of a capital stock divided into equal shares, each share representing a par value usually of \$200 or \$250. A person becomes a member by subscribing for 1 or 2 shares as a minimum, or for 30 or 40 shares as a maximum, and paying an initiation fee—usually \$1—and the first weekly or (calendar) monthly contribution to the fund—usually at the rate of \$1 a month per share. When these periodical contributions, increased by the profits from interest on loans, premiums for loans, fines, and other sources of gain, have grown to be equal to \$200 or \$250 for each share, the object of the B. and L. A. is accomplished. If a member has borrowed from the society a sum equal to the face value of his share or shares (and he cannot have borrowed more), his debt is cancelled; if he has borrowed less, he receives the difference in cash; if he has simply been a contributor, he receives in cash for each share held by him the \$200 or \$250 represented thereby. The stock of an assoc. whose shares are \$200, payable in instalments of \$1 each calendar month, or whose shares are \$250, payable in weekly instalments of 25 cents, may be expected to reach par in 10 yrs. The reason of this rapid attainment of par value by the stock is found in the principles on which these associations are conducted. Members may be borrowers or only investors, or partly one, partly the other. If a member does not borrow, he has only to pay regularly his periodical instalments on his shares; there are no extras, no incidental expenses; but a small fine is imposed in case of delay in making the periodical payments. Besides

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these payments, a borrower has to pay a premium or bonus, in order to have the loan awarded to him. At stated intervals, say every 2 months, or whenever a given sum (say \$3,000) is accumulated, a sale of loans by auction is held, at which loans in sums equal to the par value of the shares are awarded to the members who offer the highest premium. That premium may assume different forms, as will be seen, and it may differ between one sale or allotment and another. The borrower gives security for the continued payment of his instalments on his shares, of the interest on the loan, and of the instalments on the premium, if the premium was not paid at the granting of the loan. All these moneys, going into the common treasury, swell the fund and hasten the day of solvency. When that time comes—i.e., when the shares have become worth their face value—the debt of the borrowing member to the soc. is cancelled.

The premium is sometimes deducted from the loan—e.g., a loan of \$250 is bought at a premium of \$50; the borrower in that case gets \$200. By the constitution of some societies, he pays interest on \$250; in other societies, interest is paid on only the net amount of loan. Some societies permit the premium to be paid in weekly or 4-weekly instalments. Different from this is the system of 'interest in advance,' under which the would-be borrower offers to pay so many months' interest (above a fixed minimum) in advance for the privilege of a loan. In this case the amount of the interest is deducted from the amount of the loan, and the borrower has to pay only his instalments on his shares, till the months have passed for which he paid interest. Thenceforth he has to pay the regular rate of interest till the society has reached the goal of solvency. If a member wishes to draw out of the society before the end, he takes his actual contributions plus a low rate of interest, as determined by law or by the constitution and by-laws of the association.

A member withdrawing from a B. and L. A. is usually entitled to receive, in addition to the amount of his weekly or monthly contributions, interest on the same at a rate fixed by the regulations of the society, and under certain conditions a fixed proportion of the dividends declared on his shares. When a member withdraws within the first year of the existence of the association or of the 'series' to which his shares belong, usually he receives no interest. The member who withdraws at a later period is usually entitled to a share in the declared dividends, proportioned to the length of time over which his contributions have extended. Thus, after the 4th year he may receive 40 per cent., and for each year thereafter an additional 10 per cent. of the profits. And as soon as the profits and subscriptions on the shares in a series amount to the face value of the stock, the shares immediately become due, and are payable to the holders in the order of their original taking of stock.

BUILDING AND LOAN ASSOCIATION.

In the practical working of these societies it was early found that, as the term of their existence approached, difficulty was experienced in placing money at loan. But few borrowers desire loans for short periods, and though the premium grew less as the stock approached par, that advantage was more than offset by the fact that all loans were peremptorily payable at the expiration of the association's term. Further, no new members joined, for the shares having greatly increased in value, their purchase became more difficult; the new member was obliged to pay a considerable sum to put himself on an equality with those who had belonged to the association for years. To remove these difficulties and make membership easily attainable to all, the plan of 'series' was adopted, and is now in almost universal use. Under this plan, the stock is issued in series, each having its own term for maturing, and each in effect being a new association. A new series may be started either at fixed times, as semi-annually, annually, etc., or whenever occasion may require. The funds from all the series are deposited in the general treasury of the society, and the accumulations from the contributions of all the members are open on equal terms to all. Accounts are kept with all the series, and the profits adjusted among them. When series 1 has reached the goal of solvency, series 2, 3, 4, etc., continue their business without any change.

The officers of a B. and L. A. are usually a pres., vice-pres., sec., treas., auditors, trustees, and an attorney. The sec. is the only salaried officer; the attorney is paid by fees, and his services are usually chargeable to borrowing members. No remuneration is due to the other officers as such. The funds of a B. and L. A., if it is, as most such societies are, a purely local assoc., are adequately safeguarded by the law in most states, and by the regulations and usage of the assoc. itself. All money must be deposited in bank immediately, and usually cannot be withdrawn without an order signed by the pres. The treas. is usually required at each regular meeting (weekly or monthly) to exhibit the bank-book to the board of management. No large sum of money can remain long in bank, for the fund must be put out at loan at fixed short intervals, or whenever a given sum is on hand.

There were, 1901-2, in the United States 5,302 building and loan associations, with a total membership of 1,539,593 and total assets \$565,387,966.

BUILDING LEASE—BUILDING STONE.

BUILDING LEASE: in the law of England, a demise of land for a long term of years, the lessee covenanting to erect certain houses or edifices thereon, according to specification. The usual term is 99 years, variable, however, according to circumstances. Special enactments control the making of such leases.

In the United States, building leases are not very common except in a few localities, and in the absence of any statutory regulations, the duration and conditions take the form of a private agreement, which may be made legally binding by having the subscribed documents recorded, between the parties interested.

BUILDING SOCIETIES: see **BENEFIT SOCIETIES.**

BUILDING STONE: stone used in construction: the chemical composition varies. The majority of kinds are more or less silicious, and are designated sandstones. These consist of particles of sand, united together by cohesion, and by a small proportion of a natural cement; in some cases, ferruginous, consisting of a compound of iron; and in other instances, calcareous, composed of carbonate of lime. Igneous rocks furnish very durable B. S., though in general the hardness of the materials renders them so difficult to work that they are seldom resorted to where softer stones can be procured. Thus, granite is largely used in bridges, in the paving of streets, and wherever great durability is required. Greenstone and basalt also are occasionally used. The B. S. in the new houses of parliament, London, is a magnesian limestone, or a double carbonate of lime and magnesia, very close and compact in texture, and soft enough to be easily cut with the chisel; unhappily it has not proved firm enough to resist weathering, having already shown signs of decay. The other forms of carbonate of lime exhibit considerable durability. Near Bath, and in the Isle of Portland, an oolitic limestone is quarried, which is easily cut, and stands well.

A convenient and accurate way of determining the durability of a B. S.—in other words, its resistance to frost and other atmospheric agencies—is to place a small block in a cold saturated solution of sulphate of soda; raise to the boiling-point, so as to expel air from cavities in the stone, which then become filled with the solution; then allow to cool, and suspend the block of B. S. in air. Every now and then, it is dipped into the solution, and subsequently air-dried. The result is, that the sulphate of soda crystallizes on the outside, and partially in the interior of the block, and in this respect acts as water does when it is frozen during winter; and if the B. S. be porous, and liable to decay by natural agencies, it gradually breaks up, and particles scale off. The amount of this corrosion can be determined by weighing the detached portions. Some building stones contain iron pyrites in little nodules diffused here and there throughout the mass, and such become discolored from the pyrites being decomposed by atmospheric influence, and the brownish-red oxide of iron (rust)

is left as a stain on the surface of the block. The liability to decay or to discoloration in a B. S. may be arrested to a great extent by coating the outer surface with boiled linseed-oil, which communicates a dark appearance to the stone, but prevents oxygen or moisture from gaining access to the block. Ordinary oil-paint is employed for the same purpose.

The most noted kinds of B. S. in the United States, in the order of their respective degrees of strength, are trap, granite, marble, limestone, and sandstone. Of these, the trap of Staten Island, N. Y., has a resistance to crushing force of 22,250 lbs. per cubic inch, and that of Jersey City Heights, N. J., 20,750. The granite of Richmond, Va., has a resistance of 21,250 lbs.; of Port Deposit, Md., 19,750; and of Quincy, Mass., and Westerly, R. I., of 17,750 each. In the marbles, that of Lee, Mass., is the strongest, showing a resisting power of 13,444 lbs., while that of Tuckahoe, N. Y., shows 12,950, and of Pittsford, Vt., 12,239. In limestones, the quarry at Kingston, N. Y., is the most remarkable, producing a stone with a resisting strength of 13,900 lbs. Glens Falls, N. Y., 11,475; Marblehead, O., 11,250; Joliet, Ill., 11,250; and Canton, Mo., 8,450, follow. Sandstone veins of working value are more numerous than any of the above. Official tests give the stone of Medina, N. Y., the greatest strength, 17,250 lbs. The noted quarry at Belleville, N. J., is second with 10,250. Little Falls, N. Y., is credited with 9,850 lbs; Massillon, O., 9,150; Vermilion, O., 8,450; Berea, O., 8,300; and Middletown, Conn., 6,950. The best known trap, the hardest and strongest B. S. in the United States, is cut at Bergen Hill, Jersey City Heights, N. J.; but its extreme hardness limits its use to foundations and those superstructures in which irregular shapes and sizes of blocks are desired. Small pieces are cut for paving stones, and the chips are utilized in ballasting the Pennsylvania railroad tracks between Jersey City and Philadelphia. Granite, the most appreciated stone for massive building purposes, is indigenous to the New England states, notably Maine, Massachusetts, and Rhode Island, and to the Alleghany, Rocky Mountain, and Sierra Nevada regions. The feldspar of granite runs from white through gray to red in color, the quartz has a smoky tinge, the hornblende is a greenish black, and the mica varies from white to a dull brown and black. These different shadings add materially to the popularity of granite, giving it a property of high architectural value for purposes of ornamentation. The quarry at Concord, N. H., yields a light gray, that at Quincy, Mass., a deep gray; while the Rocky Mountain quarries give an excellent quality of both gray and red. Marble is pre-eminent as the most beautiful B. S. the world over; but its liability to deteriorate from causes before mentioned, as well as from the effects of a strong saline atmosphere, has of late years caused it to be used more for interior than exterior work, especially in places near salt water. For the superstructure of church and public buildings it is being rapidly

BUILDING STONE.

superseded by granite. The best marble for building, ornamenting, and mural purposes is found in Rutland county, Vt., and the greater part so far quarried has been at West Rutland, Sutherland Falls, and Pittsford. Of colored marbles, black is taken out at Shoreham, Vt.; mottled gray at Plymouth, Mass.; mottled blue at Rutland, Vt.; mottled red, brown, and white near Burlington; and mottled chocolate in Tennessee. Limestones vary greatly in texture, color, and ease of manipulation. That of Lockport, N. Y., is dressed without difficulty and gradually assumes the appearance of light gray granite; and that found in Kansas near Topeka also is readily cut, but hardens with exposure. The chief kinds of limestone now in use are those quarried at Dayton, O., light brown in color; Athens, Ill., dove color; Lockport, N. Y., gray; Glens Falls, N. Y., black; and at Sandusky, O., Louisville, and Bowling Green, Ky. Sandstones are in more general use in the United States than any other B. S. They are classified as the Dorchester, Ohio, Waverley, Lake Superior, St. Genevieve, Medina, Serpentine, and brown stones. These also vary in color, bearing olive green, light drab, dove, purplish brown, straw, white, gray, grayish green, and dark red shades. Of these classes the brownstone is the most popular, and the leading quarries are at Portland, Conn., Belleville and Newark, N. J. The Ohio stone is chiefly found at Amherst and Berea; the Waverley in southern Ohio; the Lake Superior at Bass Island and Marquette, Mich.; the St. Genevieve in Missouri; the Medina in western New York; the Serpentine in the California ranges, and in some portions of Pennsylvania; and the Dorchester in the province of New Brunswick. The value of the principal building stones quarried in the United States during 1901 were granite \$15,976,961; limestone \$26,406,897; marble \$4,965,699; sandstone \$8,844,978; and trap \$1,710,857. The literature of the B. S. is quite extensive; one of the most thorough and scholarly treatises being the *Report on the Building Stones of the United States*, by Gen. Q. A. Gillmore, U. S. A. For the preservation of B. S. from decay by means of various solutions, see **STONE, PRESERVATION OF.**

BUITENZORG—BULB.

BUITENZORG, *boy'tèn-zork*: town of Java, provincial cap.; 36 m. s. of Batavia, with which it is connected by railroad. Its climate is mild and salubrious, and its botanical garden, laid out 1817, is one of the finest in the world. It has also many fine residences, a prison, a splendid palace, a garrison church, and mosques. In its neighborhood are a sacred grove, and the ruins of Padjajarara, formerly an important city and cap. of Java.

BUJALANCÉ, *bó-há-lán'thă*: city of Andalusia, Spain, about 20 m. e. of Cordova. It is surrounded by a moat and a wall flanked with old towers, has an old Arab castle, and manufactures of woolens, glass, and pottery, exports of agricultural produce, and an important annual cattle-fair, Pop. about 9,900.

BUK'KUM WOOD: see **BRAZIL WOOD**: **SAPPAN WOOD**.

BUKKUR, *bŭk'kŭr*: fortified island of the Indus, in Sinde; lat. 27° 39' n., long. 68° 56' e.; 400 yards from Roree on the left bank, and 100 from Sukkur on the right. In the ordinary state of low water, the w. and e. arms of the river are respectively 15 ft. and 30 ft. deep. In particularly dry seasons, however, the former has been known to disappear altogether, and even the latter is said to have occasionally been fordable. B. is no longer of any military value against a civilized assailant, commanded, as it is, on both sides by higher grounds. It is composed of limestone, being 800 yards long, and 300 broad, and rising 30 ft. from the average level of the stream.

BUKOWINA, *bó-kō-vē'ná*: duchy in the Cis-Leithan (non-Hungarian) section of the Austrian empire, on the Russian frontier; 4,035 sq. m. It is traversed by offsets of the Carpathians, gives rise to many rivers, and abounds in wood, with considerable mineral riches. Wood-cutting and mining afford occupation for a great number of the inhabitants. Large numbers of cattle are reared, and excellent horses. B., till the end of the 15th c., belonged to Transylvania, when it came under the dominion of the Turks, by whom it was ceded to Austria 1777. Czernowitz is the chief town. Pop. of B.—42 per cent. Ruthenian Slavs, and 33 per cent. Moldavians—(1900) 730,195.

BULACAN: town, isl. of Luzon, P.I., on Pampanga delta at the head of one of the main outlets of the Grande de Pampanga R.; 15 m. n.w. of Manila. It was formerly cap. of Bulacan Prov.; has important inland trade by river; and is in direct communication with Manila B. The most important indus. is sugar boiling. In 1859, with the exception of a few stone houses and a church, B. was destroyed by fire. It now has a town hall, church, about 2,000 stone houses and a number of factories in which silk matting is made. In 1900 it was made a military post by the U. S. authorities. Pop. 13,186.

BULB, n. *bŭlb* [F. *bulbe*—from L. *bulbus*, a globular root, an onion: Gr. *bolbos*]: the swelled-out or globular portion of a thing; an underground bud or stem consisting of scales or layers, as the onion—or solid, as the crocus—a solid bulb, however, being properly called a *corm*; the globular base of

BULB—BULBUL.

the tube containing the mercury of a thermometer, etc. **BULBED**, a. *bŭlbd*, round-headed. **BULBIFEROUS**, a. *bŭl-bĭf'ér-ŭs* [L. *fero*, I bear]: producing bulbs. **BULBOUS**, a. *bŭl'bŭs*, globular; containing bulbs. **BULBIL**, n. *bŭl'bĭl*, or **BULBLET**, n. *bŭl'bĕt*, in *bot.*, separable buds in the axil of leaves, as in some lilies. **BULBOUS-BASED**, in *bot.*, applied to hairs which are tumid at the base.

BULB, in Botany: a subterranean bud covered with imbricated scales, having at their base a flattened disc, which represents the proper stem of the plant, and from which the roots proceed downward, while from the midst of the scales an annual herbaceous stem and leaves are sent up. The scales are regarded as modified leaves, and sometimes all are fleshy, as in the lily; sometimes the outer ones are membranous, as in the onion, in which case the B. is said to be *tunicated*. The B. is popularly but erroneously regarded as the root or part of the root of the plant, and plants in which it is found are very generally described as *bulbous-rooted*. New buds are formed in the axils of its scales, which grow at the expense of the parent B., and gradually destroy it. In some plants, as the tiger-lily and some species of allium, leaf-buds (*bulbils* or *bulblets*) are developed on the stem above ground, which spontaneously separate and serve for the propagation of the plant, and which are entirely of the nature of bulbs, being formed of thickened scales, sometimes so closely united as to form a solid mass. The **CORM** (q.v.) was formerly regarded as a kind of B., and described as a solid B., but its structure is essentially different, although both it and the **TUBER** (q.v.) may be included in the description which Linnaeus has given of the B. with reference to the purpose which it serves as 'the winter-quarters of the plant.' Many bulbs, if removed from the ground during the period when the vegetation of the plant is most dormant, may be kept in a dry place without injury for a considerable time, even for years. Bulbs serve also for the preservation of plants in periods of drought, and are particularly frequent in those which delight in sandy soils. The abundance of 'bulbous-rooted' plants is a remarkable characteristic of the flora of the Cape of Good Hope. 'Bulbous-rooted' plants are very often distinguished by the beauty of their flowers, and many of them are among the most esteemed ornaments of gardens and green-houses. The bulbs of tulips, hyacinths, and other favorite flowers are important articles of trade. Some bulbs, as that of the onion, are articles of food; others, as that of the squill, have medicinal properties.

BULBUL, n. *bŭl'bŭl*: Turkish name (used also in Persian) for the nightingale, which has found its way into English poetry through Byron's patronage. But the same name is given in India to a very different bird, *Pycnonotus hæmorrhous*, belonging to the great tribe of *Dentirostres*, and formerly ranked among the thrushes, to which it is nearly allied. It is a little bird of brilliant plumage, and the male has a crest or tuft on its head. It is remarkable for its

BULGARIA.

pugnacity; the Singhalese consider it the most *game* of all birds.

BULGARIA, *bûl-gā'rĭ-a*: autonomous principality, tributary to Turkey, which till 1878 constituted the Turkish vilayet of the Danube (Tuna). B. is bounded n. by the Danube and the Dobrudscha, now Rumanian; e. by the Black Sea; s. by the Balkan range; and w. by Servia and Roumelia. There are altogether between five and seven millions of the Bulgarian race; of the 3,744,283 who formed, 1900, the pop. of the principality, 78 per cent. were Bulgarians, Area, 38,080 sq. m. The country slopes terrace-like from s. to n., and from w. to the e. The soil in some parts is very fertile. The inhabitants belong to the Greek Church. The prince, freely elected by the people, must be confirmed by the Porte with the assent of the Powers. The first choice of the Bulgarians was the Prince of Battenberg, a cousin of the Grand Duke of Hesse, who in 1879 became Alexander I. of Bulgaria. The prince, originally regarded as too Russian in his sympathies, soon became the centre of Bulgarian national aspirations; and when, in the winter campaign of 1885-6, he completely defeated the Servians, who had invaded Bulgaria, he became the darling of the people. At the same time he fell more and more into disfavor with Russia and the Czar. In the summer of 1886 he was kidnapped by Russian partisans and carried into Russia. Returning immediately, he received an enthusiastic reception; but owing to the hostility of Russia, felt himself compelled to abdicate. A provisional government was formed, and firmly maintained the national cause in defiance of very strong Russian pressure.

The earliest known inhabitants of B. were the Mœsians who contended long against the Romans, and allied themselves with Gothic and Slavonic tribes against the Greek empire. Anastasius, the Greek emperor, 507, built an extensive wall to defend his territories from Mœsian invaders. In the 7th c., the Bulgarians, of Finnish origin, whose original seat was the banks of the Volga, conquered the Mœsians, and established the kingdom of Bulgaria; they soon lost their own language and customs, and became assimilated to the other Slavonic inhabitants. After being tributary to the Greek emperors, and contending for some time against Hungary, B. became subject to the Porte, 1392; but the frightful oppression of despotic and sanguinary pashas has not, even to the present day, robbed the inhabitants of a distinctively national life and love of freedom. In 1876, Apr., an insurrection broke out prematurely in B., and was quenched in blood, the Bashi-bazouks or Turkish irregulars committing savage excesses. The atrocities in B., taken in connection with the Servian war and the condition of other Christian provinces of Turkey, led to diplomatic intervention; and in Dec. a conference met at Constantinople, but without result. The war of 1877-8, between Russia and Turkey followed. The Congress of Berlin, which revised the treaty of San Stefano, declined to sanction the erection of a Bulgarian principality extending from the Danube to the Ægean. But it constituted an autonomous,

BULGE.

though tributary, Bulgaria n. of the Balkans, and to the mainly Bulgarian province s. of the Balkans, that of Eastern ROUMELIA (q.v.), it granted administrative autonomy. In the autumn of 1885, the outbreak of a revolution in Eastern Roumelia, and Prince Alexander's acceptance of its union to B., provoked the jealousy of Servia; and on Nov. 14, King Milan invaded B., anticipating an easy march to Sophia. In the fourteen days' war which ensued, the Bulgarians suffered temporary defeat, till, by his gallantry and generalship at Slivnitza, Prince Alexander turned the tide of battle, and, driving the Servians back through the Drago-man Pass, entered Servian territory at the head of 50,000 men, and captured Pirot. In 1886, March, a 'peace without friendship' was concluded between Servia and B., and Prince Alexander was appointed gov.gen. of Eastern Roumelia. See V. Baker's *War in B.* (1879); and Minchin's *B. since the War* (1880).

From the abdication (1886, Sep. 7) of Alexander I., who had been kidnapped but had soon returned, the country was governed by a regency till the summer of 1887. While the names of many princes and others were suggested as proper persons to invest with the crown of Bulgaria, Prince Ferdinand Maximilian Charles Leopold Marie, youngest son of the late Prince Augustus of Saxe-Coburg, was finally elected prince by the Sobranje. He married 1893, Apr. 20, Marie Louise, eldest daughter of Duke Robert of Parma. Two sons have been the issue of this marriage: Boris, 1894, Jan. 30; Cyril, 1895, Nov. 17. Russia and the Porte long refused to confirm the election of Prince Ferdinand; but in 1896 he consented to have his son Boris baptized into the Orthodox Greek Church. The czar of Russia acted as sponsor, being represented in proxy at the ceremony, Feb. 14. In the same month the election of the prince was formally confirmed by the Great Powers.

Prince Ferdinand I. was born 1861, Feb. 26. He chose for his cabinet: pres. of the council and minister of the interior, Mestamvuloff; foreign minister, Dr. Stransky; war minister, Lieut.Col. Woutkouroff; finance minister, M. G. D. Natchovitch; minister of justice, Dr. C. Stoyoloff; minister of education, M. Zivkoff. The cap. of Bulgaria proper is Sofia. Pop. (1900) 67,920; cap. of South Bulgaria (or Eastern Roumelia), Philippopolis, pop. 42,849, Eastern Roumelia effected a junction with B. by a bloodless revolution 1885, Sept. The Bulgarian army, when on a peace footing, consists of 39,000 men and officers; on a war footing it numbers 175,000 with 324 guns. In Eastern Roumelia there is also an efficient militia. The number of miles of railroad open in B., 1901, was 1,020.

BULGE, n. *bŭlj* [Gael. *bolg*; W. *bulg*, a swell or blister: Gael. *bulg*, a ship's bilge or convexity: Icel. *bolga*, a tumor (see BELLY)]: the broadest part of a cask; a protuberance; a swelling out: V. to swell out; to bilge as a ship; to take in water in large quantity, as a ship that has sprung a leak; to founder. **BUL'GING**, imp. **BULGED**, pp. *bŭljđ*. *Note.*—In

BULIMIA—BULL.

the sense of 'to take in water,' 'to leak,' *bulge* is merely another spelling of *bulge*, which see.

BULIMIA, n. *bū-līm'ī-ă*, or **BULIMY**, n. *bū'lı-mı* [Gr. *bous*, an ox, used as a prefix to augment the meaning of words; *limos*, hunger]: excessive appetite for food.

BULK, n. *bŭlk* [Bav. *bŭlken*, the body: Icel. *bulki*, a heap: Dan. *bulk*; prov. Sw. *bullka*, a projection, a protuberance: Gael. *balc*, a projection, a ridge of earth between two furrows]: the main mass or body; size; magnitude; the whole cargo of a ship in the hold: V. to stuff or swell out; to swell out or become prominent. **BULK'ING**, imp. **BULKED**, pp. *bŭlkt*. To **BREAK BULK**, to begin to unload a ship; to break open a package of goods. **IN BULK**, in the mass; cargo loose in the hold of a ship and not inclosed in boxes or packages. **BULKY**, a. *bŭl'kī*, large; of great size. **BUL'KINESS**, n. *-nēs*, greatness in bulk or size. **BULKER**, n. *bŭl'kēr*, a person whose duty it is to find the capacity of a ship or goods, in order to ascertain and fix the freight or shore dues.

BULK, n. *bŭlk* [Icel. *bálkr*, a beam, a partition: It. *balco*, a projection before a window: prov. Dan. *bulke*, a boarded partition in a barn]: a framework of balks or boards; a partition of boards; the stall before a shop for the display of goods. **BULK'HEAD**, n. *-hèd*, a partition across the hold of a ship, whether to separate it into rooms, or as a safeguard in case of wreck. *Water-tight bulkheads* are among the improvements in modern ship-building; they are iron walls running athwart the hold, as a means of dividing it into several portions; the interior is thus cut off into cells, each water-tight in reference to its neighbors. When such a ship is leaking in any one of the compartments, there is thus a chance that the others may be kept dry until the damage is repaired. In iron steamships the water-tight bulkheads are usually transverse, but there are frequently longitudinal water-tight divisions also. It is now common to place the engines and boilers in water-tight sections, and experience has proved the special value of a collision bulkhead in the bow. In iron-clads of the British navy, such as the *Hercules* and the *Bellerophon*, which have an inner bottom, there are nine transverse water-tight bulkheads. In the British torpedo-ram *Polyphemus*, the principle of having numerous water-tight compartments in the lower part of the vessel has been carried as far as possible.

BULKLEY, *bulk'lı*, **PETER**: 1583-1659; b. Odell, Bedfordshire, Eng: the first minister, and one of the founders of Concord, Mass., emigrating, 1635. After studying at Cambridge Univ. he succeeded his father in the ministry at Woodhull, England, and after 21 years was removed for non-conformity. He had scholarly attainments, and was the author of some Latin poems, an elegy on the Rev. Thomas Hooker, and the *Gospel Covenant, or the Covenant of Grace Opened* (1646).

BULL, n. *bŭl* [W. *bula*; Icel. *bolli*; Ger. *bulle*, a bull: Icel. *baula*; Swiss, *bullen*, to bellow (see **BELL**)]: the animal which bellows; the male of the ox kind (see **Ox**); in *Scrip.*,

BULL.

a fierce and powerful enemy; a stock-jobber on the stock exchange who endeavors to raise the price of stocks by questionable practices—those who try to lower their price are called *bears*. BULL'ISH, *-ish*. BULL-HEADED, BULL-LIKE, a. pertaining to a bull; dogged and self-willed. BULL-BAITING, n. the rendering bulls furious by setting dogs to attack them. BULL-DOG, n. a large-headed, strong-jawed variety of dog. BULL-DOGS, in *familiar slang*, attendants on the proctors, in their official duties, in Oxford. BULL'DOZE, v. to intimidate, especially in political elections. BULL-FACED, a. having a large heavy face, as it were like a bull's face. BULL-FIGHT, n. an amusement among the Spanish and Portuguese, consisting of an exhibition of men fighting with wild bulls. BULL-FLY, n. a gadfly. BULL-FROG, a large species of American frog, uttering a loud croak or bellowing noise. BULL-HEAD, a small sea-fish. BULLOCK, n. *bŭl'ok* [AS. *bulluca*]: an ox or castrated bull fed for slaughter, so named after he is four years old—named a *bull-calf* for first year, and a *steer* up to fourth year. BULL-CALF, a male calf; a young stupid fellow. JOHN BULL, a familiar name for the personification of Englishmen, from their supposed sturdy assertiveness and pugnacious propensities mingled with honesty and dogmatism—so named by Arbuthnot in a ludicrous *jeu d'esprit*, 1712. BULL'S-EYE, n. *bŭlz-ī*, among *seamen*, a small pulley, of wood, shaped like a ring, with a rope spliced around the outer edge, and another rope running through it; a thick piece of glass inserted in a floor, a lantern, etc.; a dark distant cloud, ruddy in the centre, foretelling a storm; the centre mark on a target for shooting at; a small round window or opening.

BULL, n. *bŭl*, in IRISH-BULL [Gael. *beul-aithris*—pronounced *bŭl-ār'ish*—an oral tradition having no foundation but talk—from *beul*, mouth; *aithris*, a tradition]: a peculiar form of blundering in telling a story, in a joke, or in a remark, credited as being very prevalent among the Irish people. *Note*.—Such is the origin of this puzzling word as suggested by Dr. Charles Mackay. Some confusion in regard to the sound of the phrase, and its connection with the Eng. *bull*, might bring about its inversion, especially when its origin was unknown; compare the phrase, 'cock-and-bull story'—thus indicating a connection with the animal *bull* in reference to some of its habits.

BULL, n. *bŭl* [It. *bolla*, a circular mark or seal—from L. *bulla*, a bubble, a boss or ornament]: originally the capsule of the seal appended to letters from emperors or from the pope. Afterward, the word was applied to the seal, and then to the document itself, as the celebrated Golden Bull of the Emperor Charles IV., of Germany, 1356, fixing the laws relative to the election of emperors, and as the similar edict, of the same name, by Andrew II., of Hungary—named from the golden capsule appended to imperial letters and other important documents by the Byzantine and Frank emperors as early as the 9th c. The name is now applied exclusively to letters or documents issued in the name of the pope. Bulls are issued by the

BULL.

apostolic chancellor, and are dated 'from the day of incarnation,' whereas briefs are always dated 'from the day of the nativity.' See BRIEF. In cases of granting favors, etc., the seal is appended to the open letter by a yellow or red band of silk; but in the administration of justice, a gray hempen band is used. All bulls, excepting those addressed to the United Greek Christians, are written in Latin with Gothic letters, and on the rough side of the parchment. All bear the name and title of the pope—for example, *Gregorius Episcopus Servus Servorum Dei*, etc., is prefixed; then follows a general introduction, of which the initial words are used to give a distinct name to the B., as in the examples: the B. *Exsurge Domine*, issued by Pope Leo X. against Luther, 1520; the B. *In Cœna Domini*, the celebrated B. against heretics, often reissued since 1536; the famous *Unigenitus*, or B. against Quesnel's writings, 1713; the *Dominus ac Redemptor Noster*, or B. for the abolition of the order of Jesuits; the *Ecclesia Christi*, or the B. which completed the concordat with France, 1801; the *De Salute Animarum*, or the B. for the regulation of the Rom. Cath. Church in Prussia. To every B. the leaden seal of the Church is appended, bearing on the obverse the arms of the pope, and on the reverse his name. Bulls issued during the interim between the election and consecration of a pope have no armorial bearings on the seal. A *bullarium* or bullary, is a collection of papal bulls, as the *Bullarium Magnum Romanum a Leone Magno ad Benedictum XIII.* (19 vols., Luxembourg, 1727-58), the *B. Romanum* (28 vols., Rome, 1737-44), and the *D. Benedicti XIV.* (Mechlin, 1826-7), and more recently, the continuation of the *Bullarium Romanum Magnum* by Barberini (Vienna, 1835).

BULL, GEORGE, D.D., Bishop of St. David's: 1634, Mar. 25—1709, Feb. 17; b. Wells, Gloucestershire, Eng. He studied at Oxford, whence he retired, 1649, having refused to take the commonwealth oath imposed by the parliament. Receiving holy orders, his first charge was the parish of St. George's, Bristol. In 1658 he obtained the rectory of Suddington St. Mary's, near that city; and in 1662 was presented to the vicarage of Suddington St. Peter's. In 1669 he published his *Harmonia Apostolica*, the object of which was to reconcile the apostles Paul and James on the subject of justification. This work occasioned considerable controversy among divines, and in answer, B. published his *Examen Censuræ*, and *Apologia pro Harmonia*. In 1678 he was presented to a prebend in Gloucester Cathedral, and made rector of Avening, Gloucestershire. In 1679 he was installed archdeacon of Llandaff, and received the degree of D.D. from Oxford. In 1685 he published his *Defensio Fidei Nicenæ*, against the Arians and Socinians, Tritheists and Sabellians; and in 1694 *Judicium Ecclesiæ Catholicæ*, for which the thanks of the whole French clergy were sent to him through the celebrated Bossuet. His last work was his *Primitive and Apostolical Tradition*, etc. He was consecrated Bishop of St. Davids, 1705.

BULL—BULLA.

BULL, GOLDEN: see **BULL.**

BULL, JOHN, MUS. DOC.: 1563–1628; b. Somersetshire, England: eminent English musician. He studied music under Blitheman, organist in Queen Elizabeth's chapel. He was made Doctor of Music at Oxford, 1592, having in the previous year become organist in the Queen's Chapel, and soon afterward he was appointed prof. of music in Gresham College. He visited the continent, 1601; and again, 1613. In 1617 he was appointed organist of Notre Dame at Antwerp, where he died. The composition of the English national anthem has been attributed to him, but on insufficient evidence.

BULL, OLE BORNEMANN: 1810, Feb. 5—1880, Aug. 18; b. Bergen, Norway: famous violinist. His father, it is said, attempted to coerce him into the study of theology, and would not permit a musical instrument about the house, which treatment only gave a more decisive character to the peculiar genius of the boy. At the age of 18 he was placed at the Univ. of Christiania, from which he is said to have been expelled for taking temporary charge of the orchestra at one of the theatres. In 1829 he went to Casel, Germany, to study under Spohr, but was so coldly received that he betook himself to the study of law at Göttingen. He was subsequently at Minden, whence, in consequence of a duel, he fled to Paris, 1831. An unsuccessful attempt to drown himself in the Seine was the turning-point in his life. He thereafter acquired the patronage of a lady of rank, and rapidly rose to fame as a violinist. His style of playing was like that of Paganini. B., however, wished to excel his model in originality, and in triumphing over the most extraordinary difficulties; but it was impossible for him to follow the flight of the great Italian, in whose brain some capricious musical demon seemed to lurk. Nevertheless, he was received in Italy with prodigious enthusiasm—Malibran herself embracing him on the stage at Naples. In 1836, he visited England, Scotland, and Ireland, and subsequently travelled in a professional capacity through Belgium, Holland, Russia, and Germany. After a long repose, he sailed for America, whence he returned, 1850; but he again went out on the stage, and was so successful that he thought of retiring from public life. He purchased in Pennsylvania 125,000 acres of excellent ground, and founded a colony of Scandinavians. This turned out a complete failure through the worthlessness of the title to the lands, and B. fell back on his violin. He returned with a fortune to the United States, 1869, making his home in Cambridge, Mass.; but visited Europe again, 1875. He married in 1870 a young lady from Wisconsin. He died near Bergen, where he had a summer residence. See his *Life*, by Sara C. Bull (1883).

BULLA: genus of *Mollusca*, which in the older systems founded upon characters taken from the shell alone, contained a heterogeneous assemblage of species essentially very different. Some of those having been removed to

BULLA—BULLACE

other orders according to their organization, the genus *Bulla*, and the family *Bullidæ*, of which it is the type, are placed in the order *Tectibranchiata* of Cuvier, an order of the class *Gasteropoda* (q.v.), and of that section of it called *Monæcia*, having the male and female organs of sex combined in the same individual.



Bulla Aperta.

The *Bullidæ* have a convoluted and generally thin shell, which serves as a covering and protection for the gills, and which in some of them is large enough to form a retreat for the entire animal; in others, is itself enveloped in the mantle. This shell forms a sort of transition link between the flat calcareous plate inclosed in the mantles of the *Aplysiæ* or Sea-hares—to which B. is nearly allied—and the spiral shell of snails and other such conchiferous mollusks. The mouth of the shell is large, extending the whole length of the shell, widening toward one end, the lip acute. The gizzard of the *Bullidæ* is very muscular; and among its thick coats, in many species, are found calcareous bony plates, which being moved against each other by its muscles, serve to grind down the food. All the species are marine; some are found on the British coast. Some, from their form and fragility, are popularly called BUBBLE SHELLS, as the British *Bulla Hyatis*.

BULLA, n. *bŭl'lä*, **BULLÆ**, n. plu. *-læ* [L. *bulla*, a water-bubble]: the blisters or large vesicles on the body in some forms of skin disease; blebs; in *anat.*, a hollow rounded shell of bone. **BULLOUS**, a. *bŭl'lŭs*, pertaining to bullæ. Bullæ, as collections of serous fluids of considerable size, are situated immediately beneath the cuticle, and rising from the true skin. They differ from vesicles only in size; and no very definite line can be drawn between a large vesicle and a small bulla. They usually vary in diameter from a quarter of an inch to two inches. They may be followed by crusts or by ulcerations. They constitute a special order of skin-diseases, which includes Pemphigus and Rupia (q.v.).

BULLACE, n. *bŭl'lās* [Gael. *bulaistear*, a sloe: Ir. *bulos*, a prune: OF. *bellocier*, a wild plum-tree], (*Prunus insititia*): shrub or small tree, larger and much less spiny than the sloe, but very closely allied to it, as also to the plum, so that many botanists regard them all as one species, an opinion favored by the fact that the varieties pass into each other by imperceptible gradations. The B. may be regarded as a form intermediate between the plum and the sloe. Its leaves, however, are generally broader in proportion to their length than those of either of these, and its fruit-stalks more frequently in pairs; it differs also from both of them in its downy fruit-stalks, and in having the under side of its leaves permanently downy. The flowers are rather larger than even those of the plum; the fruit is larger than the sloe, generally globose, and, though it partakes in some degree both of the acidity and the roughness of the sloe, it is not

BULLAS—BULL-DOG.

unpleasant, especially after having been mellowed by frosts, and makes excellent pies or tarts. 'A bullace-pie is a standing dish at the harvest-home supper in the south of England. The B. is common in hedges, coppices, and banks in many parts of Europe.

BULLAS, *ból'yás*: town of Spain, province of Murcia, 26 m. w.n.w. of the town of Murcia. It is on a hill, 1,840 ft. above the sea. The streets are steep and unpaved. B. has manufactures of linen and hempen fabrics, earthenware, and brandy, and a considerable trade in manufactured goods and grain. Pop. 6,145.

BULLATE, a. *búl'āt* [L. *bullā*, a bubble]: in *bot.*, garnished with studs like bubbles or blisters.

BULL'-BAITING: a barbarous sport, formerly popular in England with all classes of society. B., practiced at Stamford, 1209, at Tutbury 1374, was declared illegal by act of parliament 1835. It consisted in causing a bull to be attacked by dogs; and in order that the bull might be made as furious as possible, his nose was sometimes blown full of beaten pepper before he was turned loose. Another form of this sport was to fasten the bull to a stake, by a rope of some yards long, and to send bull-dogs against him, one at a time, which were trained to seize him by the nose, and when this was accomplished, it was called *pinning* the bull. But no small part of the enjoyment of the spectators was derived from the success with which the attacks of the dogs were met by the bull lowering his head to the ground, and receiving them on his horns, often tossing them to a great distance. In some places B. took place regularly as a sort of annual festival, and funds were sometimes left to provide for it. King James I. of England greatly delighted in this sport. When the late Emperor Nicholas of Russia visited England, before his accession to the empire, he was present at a boxing-match and a B., which were provided to show him English tastes.

An equally barbarous sport, termed *Bull-running*, was formerly practiced at Stamford and Tutbury, where men and women took the place of dogs, maddened the bull with hideous noise, and then pursued it with 'bull-clubs,' til' the unfortunate animal expired beneath the blows of its brutal assailants.

BULL'-DOG: a kind of dog regarded as peculiarly English, but concerning which there is doubt whether it has existed as a distinct race, at least from the Roman era, or has more recently sprung up, as a variety of the mastiff, or a cross between the mastiff and some other breed. Buffon, indeed, represents the B. as the parent race, and the mastiff as derived from it, but this opinion is generally rejected. The B. has been regarded as a distinct species by some naturalists, and named *Canis Anglicus*, *C. lanianus*, etc. It is much smaller than the mastiff, but is very strong and muscular. The breadth of muzzle is greater than in the mastiff, and the head is very large, almost appearing as of disproportionate size to the body. 'The forehead sinks between the eyes, and the line of the nose rises again at a

BULLEN-NAIL—BULLER.

considerable angle; the lower jaw projects beyond the upper, often showing the teeth, which altogether, with the frequent redness about the eyelids, produces a most forbidding aspect; the ears are partially drooping, unless the terrier blood is crossed in the animal, and the tail is carried high.' The hair is short, and the tail taper, and not bushy. The color may be ochry or reddish buff, brindled, fawn, or white, the last being preferred, and should be whole or unmixed, though dogs of two colors are very common. The B. used seldom to be seen except in the company of persons who delight in dog-fighting and other barbarous sports, but now has sometimes more reputable patrons. It was formerly much employed in bull-baiting, from which it derives its name. It is remarkable chiefly for



Bull-dog.

its savage ferocity and the pertinacity with which it retains its hold, as if its jaws were locked, and it could not let go. It will hang to the jaw or nose of a bull, although lifted from the ground. Colonel Hamilton Smith says he has seen one 'pinning an American bison, and holding his nose down, till the animal gradually brought forward its hind feet, and, crushing the dog to death, tore his muzzle out of the fangs, most dreadfully mangled.' The B. is also bold enough to attack any animal, however superior in size and strength.

The BULL-TERRIER is a cross between the B. and the terrier. It is smaller than the B., more lively and docile, and equally courageous. The ears are always pointed; the best color is white, with some black about the head. It is unrivalled in rat-catching.

BULLEN-NAIL, an upholsterer's nail, with a round head, a short shank, turned and lacquered.

BULLER, *bál'ler*, CHARLES: 1806-48; b. Calcutta. He was educated at Harrow and Cambridge, at both of which he distinguished himself, and for a time studied in Edinburgh, where he had Thomas Carlyle for one of his tutors. He was called to the English bar, 1830, and entering parliament before the reform bill, continued a member of the lower house till his death. He was amiable and socially accom-

BULLER—BULLET.

plished, and many hopes were disappointed when he died. In politics, a philosophical radical, he occupied successively the posts of judge-advocate-gen. and pres. of the poor-law commission under whig governments.

BULLER, SIR REDVERS HENRY: Brit. military officer; b. 1839 in Devonshire, Eng.; entered the Brit. army 1858; served in campaigns in China 1860; Red River Exped. 1870; Ashanti war 1873-74; Kaffir war 1878; Zulu war 1878-79; and in campaigns in Egypt 1882-84 and Sudan 1884-85. He was made dep. adj.-gen. 1885; under sec. for Ireland 1887; adj.-gen. 1890; lieut.-gen. 1891. At the outbreak of the British-Boer war in S. Africa, 1899, he was placed in command of the Brit. forces who went to the relief of Ladysmith. In attempting to force the passage of the Tugela R. at Colenso, he was repulsed with a loss of 1,097 officers and men and 11 guns, but after several repulses succeeded in relieving the city, 1900, March 3.

BULLET, n. *bûl'lèt* [F. *boulet*—from F. *boule* or *bulle*, a ball, a bubble—from L. *bulia*, a bubble, a round knob]: the leaden projectile discharged from a musket, fowling-piece, pistol, or similar weapon. When the smooth-bore muskets alone were used, bullets were made by casting. Molten lead was poured into molds; and the molds were dipped in cold water, to hasten the solidification of the lead. The molds were cooled after every few times of using; and the lead was heated only to the degree for maintaining fluidity. Bullets are now made more expeditiously, and more truly spherical in form, by compressing machines. The lead is first fashioned into a rod about a yard long, by five or six eighths of an inch thick; this rod is passed between rollers to condense it; then between other rollers to press it into a row of nearly globular pieces; then a spherical die gives the proper form to each of these pieces; and, lastly, a treadle-worked punch separates them into bullets. With one machine and two dies, 9 boys can make 40,000 bullets a day.

Spherical bullets for the old muskets, carbines, and pistols varied from 14 to 20 to the pound, and from 0.60 to 0.68 of an inch in diameter. There is a particular ratio, depending on the specific gravity of lead, by which the number to the pound will give the diameter, or *vice versâ*. Such bullets are being superseded by other forms better suited for rifles. These forms are numerous. Robins's B. was egg-shaped, with the centre of gravity at the larger end; Beaufoy's was ovoid, with a hemispherical cavity at one end; Manton's was a spherical ball put into a wooden cup, with projections on the exterior; Greener's was oval, with a plug of mixed metal driven into a hole barely large enough for it; Norton's, Delvigne's, Minié's, and others, are, or were, of various elongated shapes, mostly with some kind of plug, which, driven into the lead by the force of the explosion, causes it to fill up the grooves in the rifling of the barrel. This expanding or dilating action has been claimed by many inventors; but the British government, 1857, awarded Mr. Greener £1,000, as the person who had practically solved the difficulty as far back as 1836. The bullets for the Enfield

BULLETIN—BULL-FIGHT.

rifles are now made with extraordinary speed, by machinery of beautiful construction. The machine draws in a coil of leaden rod, unwinds it, cuts it to the required length, stamps out the bullets with steel dies, drops them into boxes, and conveys them away. Each machine, with its four dies, makes 7,000 bullets per hour; and four such machines, in an easy day's work, turn out 300,000 bullets. So nearly are the machines automatic, that one man can attend them all. Other machines, attended by children, produce an equal number of little boxwood plugs for filling the cavity at the hinder end of the bullet. For the differences between various bullets of modern invention, see CARTRIDGE: BREECH-LOADING.

BULLETIN, n. *búl'lē-tín* [F. a packet—from It. *bulletino*—from *bullo*, an edict of the pope]: an official report or notice; a public announcement, as a dispatch from a general, a report of the health of distinguished personages; also, brief authenticated documents as of scientific societies; and in France, the slip of paper on which an elector writes his vote.

BULLET-TREE, or BULLY-TREE: a tree in Guiana valued for its wood, which is solid, heavy, close-grained, and durable; also for its fruit, which is a drupe about the size of a cherry, and of delicious taste. The B. is supposed to belong to the genus *Mimusops* (nat. ord. *Sapotaceæ*, q. v.).

BULL-FIGHT: combat of men with bulls for the entertainment of the public. They were common in Greece, particularly in Thessaly, and in Rome under the emperors, though in later times forbidden by emperors and popes. They are still a favorite pastime in Spain and Mexico. In Spain they were abolished by Charles IV.; but Joseph, Napoleon's brother, re-established them, out of policy, the mass of the Spanish population being passionately fond of the sport. The most magnificent bull-fights were at one time instituted by the monarchs themselves; at present, both in the capital and in the larger towns of Spain, they are held either as private speculations, or for the benefit of public institutions. In Madrid, the bull-fighting season commences in April, and lasts until November. During that time, there is at least one afternoon in every week devoted to the sport. The proceeds go to the funds of the general hospital. The fights take place in a kind of circus, called the *Plaza de Toros*, round which the seats rise one above another, like the steps of a stair, with a tier of boxes over them. The *Plaza* is capable of containing from 10,000 to 12,000 people, who pay a high price of admission, considering the rate of wages in Spain; and all go attired in their best to the spectacle. The best Andalusian bulls are bred at Utrera, the best Castilian ones on the Jarama, near Aranjuez. The latter are the breed usually chosen for fight in Madrid. They are fiercer and more active, but inferior in strength to British animals. The horses engaged in the conflicts are worthless brutes, fit only for the knacker. The men employed in the fight are generally those who have been

BULL-FINCH.

bred to it as a profession, but occasionally amateurs may take part in it. The B. has been described as a tragedy in three acts. The principal performers in the first are the *picadores*; in the second, the *chulos* are the only actors; the third and last act devolves solely on the *matador*. The *picadores* are all mounted, dressed like Spanish knights of the olden time, and armed with a lance; they take up their position in the middle of the circus, opposite the bull-stalls. The *chulos*, who are on foot, are gay with ribbons, and wear very bright-colored cloaks; they distribute themselves in the space between the barriers. The *matador*, or chief combatant, is also on foot. He is handsomely dressed, and holds in the right hand a naked sword, in the left the *muleta*, a small stick, with a piece of scarlet-colored silk attached. On a sign given by the chief magistrate, a bull is let out from the stalls; the *picadores* stand ready in the arena waiting his charge. With a brave bull they find all their skill requisite in acting on the defensive; with a cowardly one they act on the offensive; and should their stabs be ineffectual in rousing the animal to the requisite fury, the poor beast is hooted by the crowd, and ultimately stabbed ingloriously in the spine. Whenever a horse is wounded, the rider betakes himself to flight; and when either the above casualty happens, or a *picador* is thrown the *chulos* rush in, and attract the bull by their cloaks, saving themselves, if need be, by leaping over the palisade which incloses the circus. At the same time another *picador* calls off the bull's attention to himself by shouting. When the bull begins to flag, the *picadores* are succeeded by the *chulos*, who bring with them the *banderillas*—i. e., barbed darts about two ft. long, ornamented with colored paper-flags, which they stick into the neck of the animal. Sometimes these darts have crackers attached to them, the explosion of which makes the bull furious. The *matador* now enters alone to complete the tragic business. As soon as the bull's eye catches the *muleta*, he generally rushes blindly at it; and then the *matador*, if he is well skilled, dexterously plunges the sword 'between the left shoulder and the blade,' and the animal drops dead at his feet. The victorious *matador* is greeted with acclamations, and not less so the bull, should he wound or even kill the *matador*, in which case another *matador* steps forth into the arena; but human life is rarely sacrificed. Eight or ten bulls are often dispatched in a single day; twenty minutes being about the time usually taken to slay one.

In Madrid, 1833, June, 99 bulls were killed in a week. Bull-fighters are regarded as the lowest class in Spain. They are very ignorant and superstitious; and those who are killed on the spot, and die without confession, are denied burial rites.

BULL-FINCH, n. *búl'fīnsh* [corruption of *bud*-finch, as causing destruction among buds], (*Pyrrhula vulgaris*): bird of the great family of *Fringillidæ* (q.v.) a little larger than the common linnet, and of a genus closely allied to the Grosbeaks and Crossbills. The genus is particularly characterized by the short, thick, rounded bill, of which

BULL-FINCH.

the sides are inflated and bulging, and the tip of the upper mandible overhangs that of the lower one. The B. is a bird of very soft and dense plumage, of a delicate bluish-gray color above, the under parts of a bright tile-red, the crown of the head and the beak jet black, which color also appears in the greater wing and tail coverts, in the quills, and in the tail-feathers; the wings are crossed by a conspicuous white bar. The colors of the female are less bright than those of the male. The tail of the B. is almost even. This bird is not unfrequent in England, Ireland, and the s. of Scotland; and is found in most parts of Europe, from the s. of Norway to the Mediterranean, extending e. throughout Asia, even to Japan. It frequents woods and gardens, builds its nest in trees or bushes a few



Bull-finch.

feet from the ground, feeds chiefly on seeds and berries in winter, and in spring is excessively destructive to the buds of fruit-trees in some places, selecting the flower-buds, apparently finding them the most palatable of all food. Selby says: 'I have known a pair of these birds to strip a considerable sized plum-tree of every bud in the space of two days.' On this account, gardeners are sometimes compelled to wage war against the bull-finch.

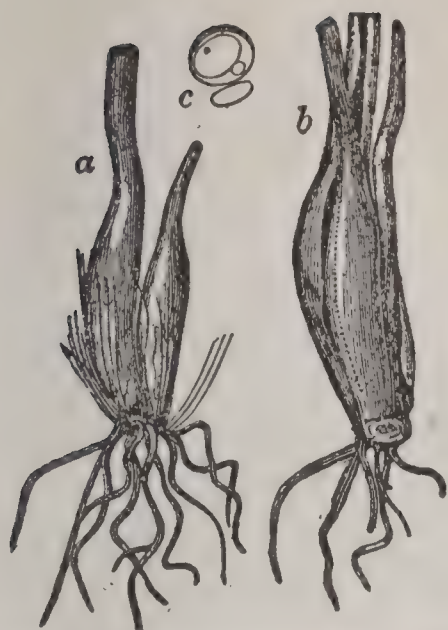
The song of this bird, in a wild state, is very simple, and has no particular quality to recommend it; but it is remarkably susceptible of improvement by education; and trained bull-finches of superior requirements are sold at a considerable price. Some of these birds learn to whistle an air very accurately, and with a power and variety of intonation far exceeding their natural song. The ability to whistle several airs well is rare. The training of these birds is a work both of time and trouble: it is done chiefly in Germany. Not less than nine months of training are requisite: it begins when the bird is a mere nestling, and must be carefully continued till after the first moulting;

BULL-FROG—BULL-HEAD.

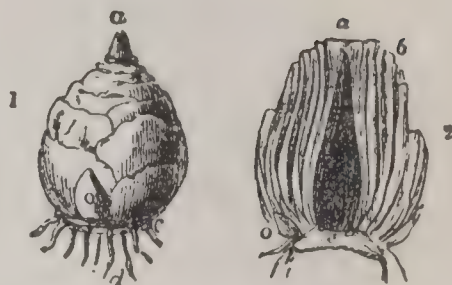
for it is remarkable that all previously acquired is liable to be lost at that time, or is afterward so imperfectly remembered that the bird is of little value. The B. is capable of very strong attachment to those who feed and caress it, and often becomes so thoroughly domesticated as to exhibit no desire for liberty.—Curious variations of plumage are sometimes observed in it.—Other species of the genus *Pyrrhula* are known, natives of different parts of the world; and in this genus some ornithologists include *Corythus* of Cuvier, of which one species, the Pine-finch (q.v.), or Pine Grosbeak, is a native of Britain.

BULL'-FROG (*Rana pipiens*): species of frog (q.v.) found in most parts of the United States and Canada, but chiefly in the southern states. It is of large size, eight to twelve inches long, of an olive-green color, clouded with black. It receives its name from the remarkable loudness of its voice, which has been compared to the bellowing of a distant bull, and comes in as a hollow bass in the frog concerts which at certain seasons are commonly heard in the evening and all night long in marshy places in America. Its voice can be distinctly heard at a distance of forty or fifty yards. It sits for hours during the day, basking in the sun, near the margin of a stream, into which it plunges with a great leap on the least appearance of danger. It does not confine itself to insect and molluscous food, like smaller frogs, but is said to be partial to young ducks, and to swallow them entire. Audubon says 'its flesh is tender, white, and affords excellent eating,' the hind legs, however, being the only part used for food. He adds that these parts make excellent bait for the larger cat-fish, and that he has generally used the gun for procuring them, loading with very small shot.

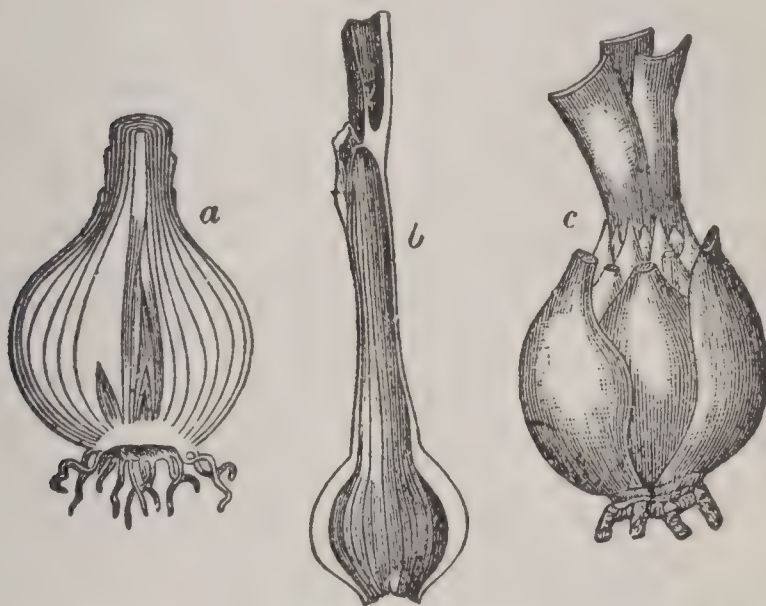
BULL'HEAD, or **RIVER BULLHEAD**, or **MILLER'S THUMB** (*Cottus Gobio*): small fish, abundant in clear rivers and streams, in some parts of the British Islands, throughout the greater part of Europe, and in the n. of Asia. It seldom exceeds four or five inches in length; is of a dark brown color on the upper parts, and white beneath; has rather large fins, with rays slightly produced into spines and spotted; and in general appearance is not unlike the gurnards (q. v.). It is generally regarded as a disagreeable object, on account of the great size and depressed form of its head, from which it derives its English names; the name, Miller's Thumb, alluding to the broad rounded form which the last joint of the thumb of a miller used to acquire when machinery was rude, by its continual employment in testing the quality of the flour produced. The appearance of the B. is still more unattractive from the entire absence of scales, a characteristic of the genus to which it belongs, the whole body and head being covered with a soft skin. Yet it is said to be of delicate flavor, and in some countries is sought as food. Izaak Walton speaks of angling for the B., and in his pleasant quaint style describes the habits of the fish: 'He does



Bulb of *Allium ursinum*: *a*, Side view; *b*, Front view; *c*, Section.



a, Tunicated bulb of Onion; *b*, Onion leaf dissected off; *c*, Bulb of *Lilium candidum*, showing a reduction of leaves toward scaly bulb.



1, Bulb of Hyacinth; 2, Longitudinal Section of ditto. *a*, Bud or growing point; *b*, Bases of leaves; *c*, Crown of root or stem; *d*, Fibres of root proper; *e*, Young bud or offset.



Bull.—Leaden Bulla of Pope Alexander IV.

BULLINGER.

usually dwell and hide himself in holes, or amongst stones in clear water, and in very hot days will lie a long time very still, and sun himself, and will be easy to be seen upon any flat stone, or any gravel, at which time he will suffer an angler to put a hook baited with a small worm very near into his mouth, and he never refuses to bite, nor indeed to be caught, with the worst of anglers.'—The other British species of the genus *Cottus* (q.v.) are marine. The name B. is not usually given to any of them. A sea-fish of ε



Bullhead.

nearly allied genus (*Aspidophorus*) is sometimes called the ARMED BULLHEAD; it is also known as the POGGE (q. v.).—The River B. differs from the marine species of the same genus, in having only one short spine on each side of the head, on the *preoperculum*.—In America B. is the usual name for several species of small voracious marine and river fish of this genus and of an allied genus. The Sculpin is the popular name for one of the most disagreeable of these species; it is not sought for the table.

BULLINGER, *bŭl'ing-ër*, HENRY: 1504, July 18—1575, Sep. 17; b. Bremgarten, canton of Aargau: friend of Zwingli, and one of the chief reformers in Switzerland. He studied at Cologne, where he became acquainted with the writings of Luther; and during 1527 he attended the theological expositions of Zwingli, and went with him to the religious conference at Bern 1528, the result of which was the reformation of the canton. In 1529, he married Anna Adlischwyler, formerly a nun, who bore him eleven children. By a powerful sermon which he preached at Bremgarten, 1529, on Whitsunday, B. induced his whole congregation to make a profession of Protestantism. In 1531, he was compelled by the Rom. Cath. party to flee from the canton, and went to Zurich, where, in the following year, he was appointed pastor of the principal church. In the controversy on the eucharist and the affairs of the Anabaptists, B. distinguishes himself by integrity and moderation; and in his house at Zurich several German theologians, compelled to leave their country, were hospitably sheltered. He took part in drawing up the first Helvetic Confession at Basel, 1536, and in establishing a close relation between the Swiss and Anglican Churches. His writings are numerous. The most important is a *History of the Reformation*, pub. first at Zurich, 1838. His sermons have been translated into English. See the lives of B. by Hess (1828) and Christoffel (1875).

BULLION.

BULLION, n. *búl'yŭn* [F. *bouillon*, a boiling, a boss, any great-headed nail—from mid. L. *bulliōnem*, a mass of gold or silver: F. *billon*, base coin: Sp. *vellon*, an alloy of silver and copper: mod. Gr. *boullono*, I seal or stamp: OE. *bullione*; OF. *boillion*, the mint or exchange]: formerly the mint where the precious metals were alloyed and made into money; the alloy or composition of the current coin permitted by the mint; gold or silver of the standard fineness, in any form not money—generally in small bars called ingots; gold and silver in the mass; foreign or uncurrent coin. Though B. usually means uncoined gold and silver in bars or other masses, in discussions on the currency, the term is frequently used for the precious metals coined and uncoined. While in England B. came to signify the standard metal of which the coins are made, in France, where the kings debased the currency much more than was ever done in England, *billon*, the mint, came to signify the base mixture issued therefrom.

It is still a question how far any great increase in the supply of B. has that effect in lessening the value of money, and consequently raising prices, which has always been naturally attributed to it. It may indeed be maintained with some plausibility, that if B. were capable of being produced to such an extent beyond the actual demand for it as to glut the market, it would cease to be that general standard of money value which it has become just because it is of all others the article which is steadiest in requiring a certain outlay of labor to produce it. Rise in prices has accompanied large supplies of gold, but it has accompanied large supplies also of other commodities indicative of a great increase in riches. It is certain that great increases in the supply of B. do not, as in the case of other goods, glut the market. For some years past, the supply of gold, owing to the new fields opened in America and Australia, has been quadrupled, with certainly no more influence on prices than a general increase in prosperity might cause. There is, it will be observed, this great difference between gold and other commodities, that besides what may be within the earth, there is a great mass which has been accumulating for thousands of years in the possession of mankind, which comes forth as it is wanted. A few millions of tons of iron, or bales of cotton, beyond the usual annual average, would perhaps add a hundred per cent. to the available quantity for consumption; but a few millions of pounds worth of gold, having to be counted with all the gold in existence in the world, makes a scarcely perceptible addition to the stock.

The term B. is in Great Britain associated with the memorable **BULLION REPORT** of 1810. In 1797, by what was called the Restriction Act (see **BANK**), the Bank of England was restrained from paying its notes in gold. There thus came to be two separate and independent currencies in the country—one of B. the other of paper. They came to differ in value from each other so much that in 1813, gold, of which the mint price was £3, 17s. 10d. per ounce, was actually worth in bank paper, £5, 10s., or, in other

BULLOCK—BULL RUN.

words, the one-pound bank-note was worth 14s. 2d. There were various opinions on the cause of this difference. Some people simply said that gold was dear, taking paper as the standard of value; others said it was owing to the exports not balancing the imports; others, to too great facilities in discounting, by which money was advanced on bad security; and in general it was held that there could be no over-issue of paper-money, if it was backed by good security, and employed only for genuine transactions, and not in fictitious credits. In the meantime, the select committee on the high price of gold B. had been wishing to get the truth, not through theories or speculations but through facts. The work of the committee was conducted chiefly by Mr. Horner, and aided by Sir Robert Peel, then young, and both entered on the task without any prepossession, and in the desire to find the truth. They established the conclusion, among other important truths, that paper money is always liable to be overissued, and consequently depreciated, unless it be at all times immediately convertible into gold, and the monetary policy of the empire was subsequently established on this principle. For a full analysis of the B. report, see Macleod's *Dictionary of Political Economy*.

BULLOCK, n.: see under **BULL 1**.

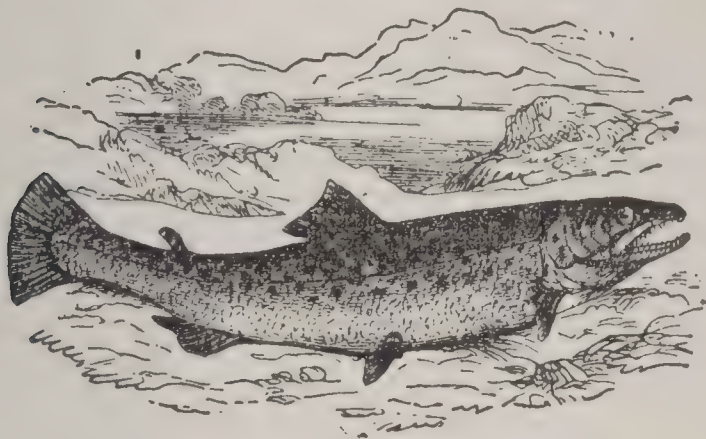
BULL RUN: the name of a small stream in n.e. Va., which runs into the Occoquan, about 25 m. s.w. of Washington; historical as the scene of two engagements between the Union army and the Confederates early in the war of secession, which were important in their moral effect, even more than for their immediate practical results. The first battle was fought 1861, July 21, and was the earliest engagement of the war wherein any large number of troops appeared on either side. The battle occurring so near Washington, with hitherto untried volunteers, about equally matched in numbers, naturally created great excitement during its progress. The Union forces were commanded by Maj. General Irwin McDowell, and the Confederates by Gens. Johnstone and Beauregard. Johnstone had been with the Army of the Shenandoah at Winchester, but learning of the attack on Gen. Beauregard at Manassas (or Bull Run), he left that position and hastened to Beauregard's assistance, covering his movements with Stuart's cavalry. He ranked Beauregard, but on arriving at the field left the latter in command. The forces numbered about 28,000 on each side, although, on account of bad handling, only about 18,000 Union men were actually in the fight. Notwithstanding this misfortune the Union side was successful until about 4 P.M., when a sweeping and impetuous charge from Beauregard's whole line completely routed the Federal forces, who fled across the stream to Centreville and immediately thereafter retreated to Washington. The Union loss was, killed, 481, wounded, 1,011, missing, 1,460; Confederate losses, killed, 378, wounded, 1,489, missing, 30. Naturally the Confederates gained great prestige for their success in this battle.

A little more than a year later, 1862, Aug. 29, 30, a

BULL TROUT.

second battle was fought on the same field, and again the Union army was defeated. In this battle Gens. McDowell and Pope commanded the Union forces, while the Confederates were commanded by Gens. Lee, Stonewall Jackson, and Longstreet. On the last day of the fight the Unionists were defeated and fell back to Centreville, where they were again repulsed, after which they retreated to Washington. The forces engaged in the two days' battle numbered about 35,000 Federal and 46,000 Confederates. The estimated Union losses, killed, wounded, captured, and missing, were reported at 11,000. The Confederate loss was reported by Lee to be 1,090 killed, and 6,514 wounded. In referring to these engagements the Confederates always designate them as 'the first and second battles of Manassas.'

BULL TROUT (*Salmo eriox* or *S. griseus*): fish nearly allied to the salmon, and like it, migratory, ascending rivers, in which it deposits its spawn, but living chiefly in the sea. It occurs in many of the rivers of Britain. It is frequently called the **GRAY TROUT**, sometimes simply the



Bull Trout (*Salmo eriox*).

GRAY, and is the **SEWEN** of the Welsh rivers. It sometimes attains the weight of 20 lbs., although it is more commonly under 15 lbs. weight. It is less elegant in form than the salmon; the head and nape of the neck are thicker in proportion; and the tail, beyond the adipose fin, is more bulky and muscular; the tail fin is square at the end in young fish (in some places called *whitlings*), and in older fish becomes convex by the elongation of the central rays, whence the name *roundtail* sometimes given to this species. The scales are rather smaller than those of a salmon of equal size, and the color is less bright; the males in the spawning season being reddish brown, the females blackish gray; at other times the general color is like that of the salmon trout. The B. T. agrees with the salmon in having only a few teeth on the most anterior part of the *vomer* (the bone which runs down the centre of the palate), while the salmon trout, the common trout, and the great lake-trout, have a long line of teeth there; the teeth are larger and stronger than those of the salmon; there are differences

BULLY—BULRUSH.

also in the form of the gill-covers. To anglers the B. T. is next to the salmon as a prize, and by many is mistaken for it. The flesh is paler in color, coarser, with much less flavor, and much less esteemed.—The name B. T. has been given also to the HUCHO (*Salmo Hucho*), or salmon of the Danube, which sometimes attains the size of 30, or, it is said, even of 60 lbs.

BULLY, n. *búl'li* [Dut. *bulderen*, to bluster: Ger. *poltern*, to make a noise: Sw. *buller*, noise]: a quarrelsome cowardly fellow; one who blusters and threatens: V. to insult with noise; to overawe by threats. **BUL'LYING**, imp. *-lĭ-ing*: N. the act of one who bullies. **BUL'LIED**, pp. *-lĭd*. **BUL'LIRAG**, v. *-lĭ-räg*, to insult in a bullying manner. *Note*.—**BULLY** is probably from **BULL** 1, in the sense of a rude, swaggering, quarrelsome man, behaving like a *bull*: Dut. *bul*, a bull, a rough unsocial man.

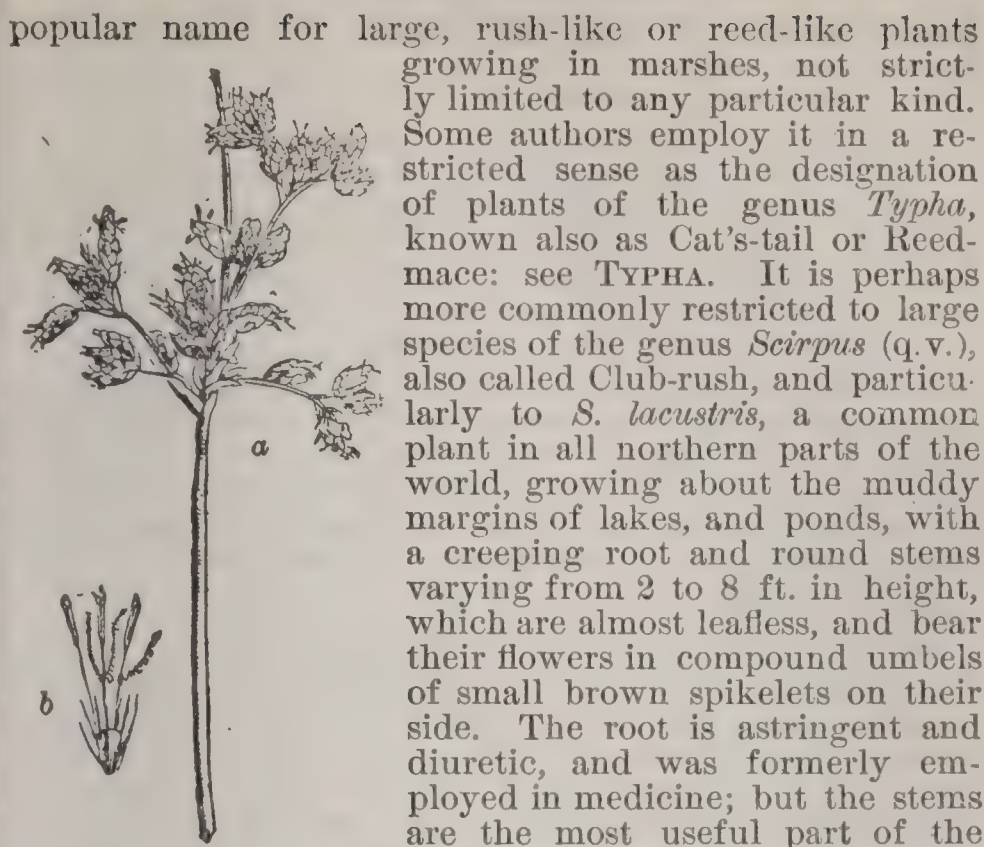
BÜLOW, *bü'lō*, **FRIEDRICH WILHELM VON** (Count Dennewitz): 1755–1818, Jan. 11: Prussian general in the war of liberation. He entered the army young, and soon distinguished himself. When Prussia declared war with France 1813, B. commanded in the first successful encounter with the French at Möckern, April 5, and revived the self-confidence of the army after the adverse battle of Lützen. His victories over Oudinot and Ney at Grossbeeren and Dennewitz, saved Berlin, and inflicted severe loss on the enemy. He was conspicuous in the battle of Leipsic, and by taking possession of Montmartre, finished the campaign of 1814. The king acknowledged his services by an estate worth \$150,000, and the title of Count Dennewitz. In the campaign of 1815, he joined Blücher by forced marches, and headed the column that first came to the aid of Wellington at Waterloo. He died at Königsberg.

BULOZ, *bü-lo'*, **FRANÇOIS**: 1803–77: b. near Geneva, Switzerland: French writer. He was educated in Paris, where he first became foreman in a printing office, and made his debut in literature by translations from the English. In 1831, he founded the *Revue des Deux Mondes*, which was the principal work of his life, and exerted a powerful influence on politics and literature. Since his death, it has been edited by his son. He published a complete summary of universal history (1850); and a number of other works.

BULRAMPUR': town of Oude, India, near the frontier of Nepaul; n. lat. 27° 24', e. long. 82° 15'; on the Raptee, in a plain; 90 m. n.e. from Lucknow. It is of considerable size, mostly of mud houses, covered with thatch. From B. there is a magnificent view of Dhawalagiri. The town is on one of the most frequented routes between Lucknow and Nepaul, so that during spring and summer it is thronged by traders, exchanging the products of Hindustan and Tibet. Pop. about 16,000.

BULRUSH, n. *búl'rŭsh* [*bull*, meaning large, and *rush*:]

BULSAR—BULTI.



Bulrush (*Scirpus lacustris*): *a*, top of stem and flowers; *b*, a single floret.

plant, being used for making chair-bottoms, mats, etc.; also by coopers for filling up spaces between the seams of casks, to which purpose their spongy nature particularly adapts them; and frequently for thatching cottages.

BULSAR, *būl-sar'*: seaport of India, in the British dist. of Surat, presidency of Bombay, on the estuary of a small river of the same name, which falls into the Gulf of Cambay. It is 44 m. s. of Surat. It is a thriving place, with manufactures of ginghams, and considerable trade in grain, salt, and sugar. The people are chiefly weavers and sailors, but partly also employed in agriculture. Pop. (1871) 11,313; (1891) 13,229.

BULSE, n. *būls* [Port. *bolsa*, a purse]: in *India*, a bag or purse in which to carry or measure valuables—as diamonds.

BULTI, *būl'tē*, or **LIT'TLE TIB'ET**: territory on the Upper Indus beyond the Himalaya, a sort of debatable land between India and Tatar. It is immediately n. of the Vale of Cashmere, with which it is politically connected by conquest. It occupies about 8,000 sq. m.; in n. lat. between 30° 30' and 36°, and in e. long. between 75° and 77°. With an average elevation of about 7,000 ft. above the sea, B. is surrounded by mountains of nearly the same height above its own level. Hence the temperature is such that only snow falls in what ought to be the rainy season, though in summer the thermometer ranges at noon from 70° to 90° f. European fruits are said to be plentiful. The inhabitants are of the Mongolian race, and chiefly Mohammedans. Among the animals are the sha, the large-

BULUBGURH—BULWER.

horned goat, the sheep, the musk-deer, and the ibis. The only town of consequence is the capital Iskardoh, which sometimes gives its name to the whole province.

BULUBGURH, *bŭl-ŭb-gŭr'*, or **BALLAMGARH**: town of India, principal place of a jaghire of the same name, called also Furreedabad. It is on the route from Delhi, in a pleasant, well-cultivated country. The town is not large, and is very crowded, surrounded by a high brick wall, with mud bastions and a deep ditch.

The jaghire of B. has an area of 190 sq. m. The British have never interfered with the civil or criminal affairs of the jaghire, except when their interference was requested, during the minority of the present rajah; but the rajah of B. derives his rights from the British government. The revenue of the state is estimated at 160,000 rupees. The rajah maintains a small force of 100 cavalry and 350 infantry. Pop. of jaghire, supposed abt. 57,000.

BULWARK, n. *bŭl'wĕrk* [Dut. *bolwerck*; Ger. *bollwerk*, a fortification, a fortified wall: F. *boulevard*, the ramparts of a town, a broad street at Paris (boulevard) surrounding what was once the city, and occupying the site of its ancient ramparts: It. *baluarte*; Icel. *bolr*, the bole or trunk of a tree]: a rampart; a fortification; any means of defense or protection, originally made of the boles or trunks of trees; the railboards of a ship, forming a fence or wall around the upper deck; security or defense: V. to fortify with a rampart; to protect.

BULWER, *bŭl'wĕr*, Sir HENRY LYTTON, G.C.B., The Right Hon: 1801, Feb. 13—1872, May 23; elder bro. of Lord Lytton: diplomatist and author. He entered the diplomatic service 1827, and was attached successively to the British embassy at Berlin, Brussels, and the Hague. In 1830, he entered parliament, and during the following seven years he represented, in order, the constituencies of Wilton, Coventry, and Marylebone. In 1837, he became sec. of embassy at Constantinople, where he negotiated and concluded a treaty which is the foundation of the present British commercial system in the East. In 1843, he was made minister plenipotentiary to the court of Madrid, and concluded the peace between Spain and Morocco in the following year. While in Spain his firmness and candor were a great convenience to Narvaez, the Spanish soldier-diplomatist of that day, who, pretending to have discovered the complicity of the British plenipotentiary in certain plots against the Spanish government, ordered him to leave Madrid. Both parties in the house of commons approved of the whole course of B.'s conduct at Madrid, and her majesty awarded to him the highest decorations of the Order of the Bath. He afterward proceeded to Washington, where he evinced equal art in conciliating the temper of the people, and maintaining the interests of his own country. In 1852, he was sent to Tuscany as envoy extraordinary; and in 1856 was nominated by Lord Palmerston commissioner at Bucharest for investigating the state of the Danubian Principalities. As Brit

BULWER LYTTON—BUMKIN.

ish commissioner he called forth from every minister and from every government concerned the warmest expressions of approval, and all concurred in recommending him for the post of ambassador to the Ottoman Porte, on the return of Lord Stratford de Redcliffe, in the spring of 1858. Sir Henry was raised to the peerage 1871, as Lord Dalling and Bulwer. He died at Naples. He wrote *Lives of Palmerston and Byron; Historical Characters; An Autumn in Greece; France, Social, Literary, and Political*; etc.

BULWER LYTTON, Sir EDWARD: see **LYTTON**.

BUM, v. *bŭm* [Dut. *bommen*, to beat a drum; *bommele*, a humble-bee: mid. L. *bombilŭrē*, to make a humming noise—from L. *bombus*; Gr. *bombos*, a humming buzzing noise]: to make a humming or whirring noise. **BUMBLE-BEE**, n. *bŭm'bl*, or **HUMBLE-BEE**, *hŭm'bl*, a large bee, so called from the noise it makes—contracted into *bumbee*.

BUM, n. *bŭm* [Fris. *bôm*, ground, bottom: Icel. *bottn*; AS. *botm*, bottom: Gael. *bun*, bottom or foundation (see **BUM** 1)]: the buttocks; the posterior; the part forming the seat.

BUMBAILIFF, n. *bŭm-bāl'if* [from the notion of a humming or dunning noise (see **BUM** 1): compare Gael. *beum*, a blow, a calamity]: one who duns a person for debt; one who acts in the final misfortune; *colloquially*, an under-bailiff; one employed to dun or arrest for debt; a sheriff's officer.

BUMBLE, n. *bŭm'bl* [from a character in Dickens's 'Oliver Twist' (see **BUM** 1)]: an officious overbearing parish officer; a beadle. **BUMLEDOM**, n. *bŭm'bl-dŭm*, the officious arrogance of a parish officer; conceited and overbearing conduct of officials.

BUMBLE-BEE: see under **BUM** 1.

BUMBOAT, n. *bŭm'bôt* [Dut. *bum boot*, a very wide fishing-boat: Fris. *bom*, ground, a floor: Dut. *boom*, a beam (see **BUM** 2)]: a very wide boat used by fishers in s. Holland; a boat employed to carry provisions and other articles from harbors and ports to vessels at some distance from shore. Boats of this latter kind belong to a class of petty traders, who in England are usually women. The boats are a sort of floating shops, with various articles of food, of clothing, and a variety of odds and ends. The less respectable of the B. traders try to smuggle spirits on board. Among the class of B. people generally, there is no little acuteness and enterprise. They learn all particulars about ships going and coming, and will even write to distant ports to secure a vessel's patronage. In some Chinese waters, and from Malta and some other places in the Mediterranean, the bumboats haunt vessels on short cruises, in hope of a little trade.

BUMKIN, or **BOOMKIN** (diminutive of *boom*): on ship-board, a short boom which projects over each bow of the ship, to aid in extending the lower edge or clew of the fore-sail to windward—in nautical phrase, 'to board the fore tack to.' In a boat, the B. is a small outrigger over the stern, used for extending the mizzen.

BUMMALOTI—BUNCH.

BUMMALOTI, *bŭm-ma-lō'tē* (*Saurus ophiodon*). marine fish of the family *Scopelidæ* or *Sauridæ*, often regarded as a subdivision of the great family *Salmonidæ*. It is a native of the coasts of India, particularly of Bombay and Malabar, whence it is exported in large quantities, salted and dried, to other parts of India, being highly esteemed for its rich flavor, and often used as a relish. In commerce it is known not only by the name B., but by the singular appellation of *Bombay Duck*. It is a fish of elongated form, with large fins and a very large mouth, the gape of which extends far behind the eyes, and which is furnished with a great number of long, slender teeth, barbed at the points. It is extremely voracious.

BUMMAREES, n. plu. *bŭm'mă-rēz'* [F. *bonne marée*, good fresh fish]: middlemen or fish-jobbers in Billingsgate market, who purchase large quantities of fish from the wholesale men, and then dispose of them in quantities to suit the requirements of the small dealers.

BUMP, n. *bŭmp* [Low Ger. *bums*, imitating the sound of a blow: Gael. *beum*, a stroke: W. *pompio*, to thump, to bang; *pomp*, a round mass: F. *pompette*, a pimple on the skin]: a swelling: a protuberance; a thump: V. to make a resounding or booming noise; to strike against; to thump. **BUMP'ING**, imp. **BUMPED**, pp. *bŭmpt*. **BUMPER**, n. *bŭm'pēr* [from *oombard*, a great gun, a large drinking-vessel]: a cup or glass swelled or filled with liquor till it is ready to flow over the brim. *Note*.—**BUMPER** is said to be derived from F. *au bon père*, 'to the good father'—the form of words used in drinking the pope's health: another suggested derivation is Gael. *bun*, the bottom, and *barr*, the top—that is, full from bottom to top. **BUMPER-HOUSE**, a place of public amusement full in every corner, or from bottom to top.

BUMPKIN, n. *bŭm'kĭn* [a dim. of Ger. *baum*; Dut. *boom*, a beam, a log, and *kin*, little—connected with **BUMP**]: an awkward country fellow; a rustic; a stupid peasant. **BUMP'KINLY**, ad. -lĭ.

BUMPTIOUS, a. *bŭm'shŭs* [probably formed from Eng. *bump*, as *bumping* against, or striking everything in the way]: noisily self-asserting; quarrelsome and vain-glorious; given to take offense. *Note*.—Also, said to be a mere corruption of *presumptuous*.

BUN, or **BUNN**, n. *bŭn* [F. *bigne*, a knob rising after a knock; *bignet*, a little round loaf: Gael. *bonnach*; Scot. *bannock*, a little cake]: a small sweet cake. **HOT-CROSS-BUN**, a small circular cake, impressed with a cross, largely eaten on Good Friday. *Note*.—Probably a Christian accommodation of an ancient heathen practice in presenting the *boun* or sacred cake, so named as impressed with the figure of an ox [Gr. *bous*, an ox].

BUNCH, n. *bŭnsh* [Icel. *banga*, to beat: *bunki*, a heap: Dan. *bundt*; Sw. *bunt*, a bunch]: a heap or quantity gathered together; a lump or knot; a cluster; a protuberance; a number of things growing together or tied together; a miner's term for an irregular lump of ore: V. to swell out

BUNCOMBE—BUNDLE.

in roundness; to form or tie in a lot or bunch. **BUNCH'ING**, imp. **BUNCHED**, pp. *bũnsht*. **BUNCHY**, a. *bũnsh'ĩ*, growing in bunches; having tufts. **BUNCH'INESS**, n.

BUNCOMBE, n. *bũng'kũm*, sometimes written **BUNKUM** [from *Buncombe*, a county in N. C., whose representative in congress is said to have declared, after making a showy and flaming speech, that his speech was only 'for Buncombe']: speech-making for mere show; mere claptrap; fervid oratorical display with no basis of principle. The word is not in frequent use.

BUNDELCUND, *bũn-dl-kũnd'*, or **BANDALKHAND**: territory of Hindustan, between Gwalior on the w., and the Jumna, which separates it from the Doab, on the n.e. The area formerly known as B. included four districts belonging to the British N. W. Provinces (Banda, Jalun, Jhansi, and Hamirpur). Now B. is officially used only for the 'Bandalkhand Agency,' a subdivision of the Central India Agency, and in this sense is applied to a group of nine native states, and twenty-five petty jaghires under native princes; area of the agency 10,240 sq. m. Studded, as B. is, with isolated rocks rising precipitously from its surface—each of them a nucleus, as it were, of independence—it has been politically much subdivided. Pop. of Agency (1891) 2,206,402.

BUNDESRATH, *bũn'dẽs-rát* [Ger. *bund*, federation; *rath*, council]: council of the federation. Specifically, in the existing Ger. empire, the 'Federal Council,' a legislative body consisting of representatives of the several states comprised in the empire. In the B., Prussia has 17 members, Bavaria 6, Saxony 4, Württemberg 4, Baden 3, Hesse 3, Mecklenburg-Schwerin 2, Brunswick 2, the other states 1 each: total 58.—Under the Swiss constitution the B. ('Federal Council') is the chief executive body.

BUNDI, or **BOONDEE**, *bũn'dẽ*: town of India; n. lat. 25° 26', e. long. 75° 43'; 190 m. s.w. from Agra; capital of the small state of B. It is in a valley nearly surrounded by rocky hills. The palace of the rajah is on the slope of the hill above the town, and is of great magnificence and beauty, consisting of a number of parts built at different dates, but harmonizing extremely well. The town contains few notable edifices. It has two good bazaars, but it is a place of little commerce. It is celebrated for its iron manufactures.

The raj or state of Bundi comprises 2,291 sq. m. A range of mountains, running n.e. and s.w., divides two nearly equal level tracts—that on the s.e. extending to the river Chumbul, and that on the n.w. to the base of the mountains toward Ajmere. The climate is said to be unhealthful. Although the rajah and dominant portion of the inhabitants are Rajpoots, the greater part of the population, particularly in the mountains, are Meenas, supposed an aboriginal race, who are indefatigable freebooters. The military force of the state, including the troops of the feudal chiefs and the police force, is 6,170 men. The revenue is about £50,000. Pop. of B. about 275,000.

BUNDLE, n. *bũn'dl* [Dut. *bondel*, something bound up

BUNDOBUST—BUNGALOW.

together: Ger. *bündel*, a dim. of *bund*, a bunch, a bundle. Dan. *bundt*; Sw. *bunt*, a bundle]: a number of things put together and tied: V. to tie up together. BUN'DLING, imp. BUNDLED, pp. *būn'dld*. BUNDLE-PILLAR, a column or pier with others of small dimensions attached to it. To BUNDLE OFF, in *familiar language*, to send off unceremoniously. BUNDLE OFF! get away with all you have.

BUNDOBUST, or BANDOBAST, n. *būn'dō-bŭst* [Pers.]: in *India*, an agreement; a bargain.

BUNG, n. *būng* [old Ger. *bunge*, a drum: Dut. and F. *bonde*, a bung: W. *bung*, a bung-hole]: a large round cork or wooden stopper for the hole in a cask: V. to stop up the opening in a cask with a bung. BUNG'ING, imp. BUNGED, pp. *būngd*. BUNG-HOLE, n. the hole in a cask by which it is filled or emptied.

BUNGALOW, n. *būng'gă-lō* [native name, *bangla*]: in *India*, a country house usually of one floor or flat only; a caravansary for the use of travellers. Bungalows which form the residence of Europeans are of all sizes and styles, according to the taste and wealth of the owner. Usually they consist of only a ground-floor, and are invariably surrounded with a veranda, the roof of which affords a shelter from the sun. In the chief cities of Calcutta, Madras, and



Bungalow.

Bombay some of the bungalows are really palatial residences, while in the mofussil they are of more moderate pretensions. In general they are provided with exterior offices, or buildings to accommodate the large retinue of domestics common in Indian life. Besides these private bungalows, there are military bungalows on a large scale for accommodating soldiers in cantonments; likewise public bungalows, maintained by government for the accommodation of travellers, and in which are blended the characters of an English roadside inn and an eastern caravansary. These bungalows, though they vary greatly in actual comfort, all are on the same plan. They are quadrangular in shape, one story high, with high-peaked roofs, thatched or tiled, projecting so as to

BUNGAY—BUNIAS.

form porticoes and verandas. The B. is divided into 'suits' of two, three, or four rooms, provided with bedsteads, tables, and chairs; windows of glass, and framed glass-doors. Off each room is a bath-room, and earthen jars of cool water. Travellers are expected to carry their servants, cooking-apparatus, wine, beer, bedding, etc., with them; but the khitmutgar of the better class of bungalows supplies table-ware, condiments, and even sometimes food and liquors, and he is usually skilled in cooking. Government charges one rupee, or about half a dollar a day, to each traveller for the use of the bungalow. A book is kept, in which travellers enter their names, the time of their arrival and departure, with the amount paid, and any remarks regarding the state of the B. and its attendance he may think proper. Natives seldom stop in these public bungalows, for though legally open to all, they are almost exclusively resorted to by Europeans; and natives even of good condition are fain to seek 'the squalid desolation of a tottering caravanserai,' or village 'dhurrumsala.' At every travellers' B. is stationed a government peon, who acts as watchman, and is bound to assist travellers' servants in procuring supplies of fuel and food in the nearest village. The distance between each B. on a trunk-road is generally about 12 or 15 m.—an Indian day's journey. The annexed cut represents a B. in the jungle. The introduction of railways will soon put an end to the antique system of travelling in India with its various annoyances.

BUN'GAY: market town of the county of Suffolk, England, 30 m. n.n.e. from Ipswich. It occupies the sides and summit of a gently-rising hill, on the right bank of the Waveney, and is well-built, with wide streets, the principal ones diverging from the market-place. The town grew around B. Castle, supposed to have been erected by the Bigods, Earls of Norfolk, and of whose walls some ruins remain. The ruins of a Benedictine nunnery also are to be seen in the town. The Church of the Holy Trinity is an edifice with a round tower, supposed to date from the time of Edward the Confessor. There are numerous places of worship, belonging to different denominations, and schools, charitable institutions, assembly rooms, etc. What was formerly the theatre is now used as a corn-hall. B. carries on considerable trade by the river Waveney in corn, malt, flour, coals, and lime. Pop. (1861) 3,805, (1881) 3,579; (1891) 3,832.

BUNGLE, n. *bǔng'gl* [Icel. *böngan*, a rude performance: Dan. *banke*; Icel. *banga*, to strike, as nailing on a patch: Gael. *bunach*, clumsy]: anything ill done; a botch; an affair mismanaged: V. to do anything clumsily; to mismanage an affair; to botch. **BUNGLING**, imp. *bǔng'glǐng*. **BUNGLED**, pp. *bǔng'gld*: ADJ. awkwardly done; executed badly. **BUN'GLINGLY**, ad. *-lǐ*. **BUN'GLER**, n. *-glér*, a bad or clumsy workman; one who does a thing ill.

BU'NIAS: genus of plants of the nat. ord. *Cruciferae*, distinguished by *incumbent* linear spirally-twisted cotyledons (q.v.), and a nut-like silicule (or round pod) with 2-4

BUNION.

cells. Only a few species are known, natives of the Levant. One of these, *B. Orientalis*, is cultivated in some countries—particularly in France—as a field-crop, for its leaves, which are food for cattle. It was introduced into Britain more than 100 years since, but its cultivation has never become general, the amount of herbage which it yields being comparatively small. It is sometimes called HILL MUSTARD.

BUNION, n. *bŭn'yŭn* [Dan. *bunke*, a heap: Icel. *bunga*, an elevation: Gael. *bunian*, a little root or stump—from *bun*, a root or stump]: enlarged bursa, or synovial sac, occurring in the anterior part of the foot, especially over the metatarsal joint of the first or the fifth toe (most frequently at the junction of the great toe with its metatarsal bone: see FOOT), and accompanied by more or less distortion of the joint. In the great majority of cases, bunions are directly produced by the pressure of badly-fitting boots; and if the boots are of patent leather, or any material which stops the excreting action of the skin, this may be regarded as an indirect cause. A B. begins as a painful and tender spot over one of the metatarso-phalangeal joints; the part gradually enlarges, and there are indications of an effusion into a natural bursa or a newly-formed sac. The progress of the affection may stop here, the bursa remaining, and serving to protect the subjacent parts from pressure; but far more frequently it undergoes repeated attacks of inflammation causing its enlargement; or becomes the seat of corns; or suppuration of the contents of the cyst ensues. The last accident may be followed either by obliteration of the cyst, and cure, or by a troublesome form of ulcer, especially in persons of languid circulation.

It is in its early stage that treatment may be looked to for a cure; subsequently, palliation is all that can be expected. The tender spot that precedes the enlargement should be covered by night with wet lint and oiled silk, while by day a boot or shoe exerting no pressure on the part should be worn. If the part is very tender it may be covered during the day with soap-plaster spread on wash-leather. As soon as a cyst can be detected the part should be occasionally treated with strong tincture of iodine, with the view of promoting absorption. The writer of the article on this subject in Holmes' *System of Surgery*, recommends an ointment of biniodide of mercury (ten grains to an ounce of lard) for the cure of bunions when uninflamed, and for such as have much fluid within them. It should not be applied so constantly as to blister the skin. When, from any cause, inflammation takes place in the sac, water-dressing, or a poultice, should be applied, and as soon as there are definite signs of suppuration, a free incision should be made, which at once relieves the pain, and is often followed by a complete cure.

The ulcers resulting from the bursting of a bunion are very difficult to heal, especially in old persons whose circulation is languid. Stimulating local applications, such as ointment of resin, should be applied, while opium and stimulants should be prescribed for internal use, together

with nourishing diet. Such ulcers, under the best treatment, frequently form the starting-point for senile gangrene.

BUNKER, *n.* *bǔng'kér* [Sw. *bunke*, a wooden vessel: Icel. *bunki*, a heap]: a large wooden box for containing coals; a bin. **BUNK**, *n.* *bǔngk*, a large wooden case serving for a seat during the day, and for a bed at night.

BUNKER HILL, BATTLE OF: first considerable battle of the Amer. revolution, 1775, June 17; the previous blood-shedding at Lexington (q.v.) and Concord (q.v.), in Apr. of the same year, having been more of the character of skirmishes. Aroused by those events of Apr., the patriots were gathering at various points, particularly in the vicinity of Boston, to the number of 20,000, forming a line from Cambridge to Roxbury, under command of Gen. Artemas Ward. George Washington, appointed commander-in-chief by congress two days before the battle, had not had time to arrive at the scene of action. The memorable men, Gridley Pomeroy, Prescott, Putnam, and Stark, were on the ground. It was learned that the royalist army, under Gen. Gage, intended to occupy Bunker Hill on the 18th. The patriots resolved to anticipate the movement, and 1,000 men, under Col. William Prescott, marched on the night of June 16 to fortify B. H.; but, on further consideration, the plan was modified and the earth-works were formed on Breed's Hill, where the monument now stands. In the morning, the British ships and the guns on Copp's Hill, in Boston, began a cannonade, and the British troops were set in motion for assault on the position. A force of 4,000, under Gens. Howe and Pigot, landed e. of Breed's Hill. Meanwhile, Amer. re-enforcements arrived, under Gens. Warren and Pomeroy, increasing the patriot force to probably a total of 1,500. At 2 P.M. began the British advance, in the direction of the Mystic river, for a rear attack; but this had been foreseen, and a breast-work erected near Bunker Hill, and another begun on that hill. Forces were placed w. and s.w. of the positions. The stratagem of the enemy was abandoned, and Gen. Howe made a direct assault, simultaneously with a cannonade from the ships and Copp's Hill, he commanding the right wing, and Gen. Pigot the left. Gen. Prescott, in command of the patriots, ordered them to hold their fire until they could see the whites of the enemy's eyes. Not a shot answered the fire of the British until they were near the redoubt, when the rapid volleys of the patriots broke the enemy's ranks and sent him flying, until rallied and re-enforced with artillery for a second attack, under cover of smoke from the burning houses of Charlestown, set on fire by hot shot from Copp's Hill. This movement was repulsed in the same way; but a third attack was successful, the patriots having nearly exhausted their ammunition and being forced from their lines into the redoubt, from which, after a fight with clubbed muskets, they retired across Charles-

BUNNY—BUNSEN.

town Neck. Gen. Warren was shot dead in the beginning of the retreat. The British loss was estimated at 1,050, including killed and wounded; the American, 450.—The obelisk of granite on Breed's Hill, now known as Bunker Hill, was begun 1825, when Gen. Lafayette laid the corner-stone; and was dedicated 1843. It is 221 ft. high, with an interior winding stairway; and the summit affords a fine panorama of the vicinity. On both the above occasions, Daniel Webster was the orator.

BUNNY, n. *bŭn'nĭ* [Gael. *bunag*, a stumpy tail; *bunan*, a little stump or root]: a familiar name for a rabbit; a small swelling; a kind of drain.

BUNODES: see **ACTINIA**.

BUNODONT, a. *bŭn'ō-dŏnt* [Gr. *bounos*, a mound, a heap; *odous* or *odonta*, a tooth]: having teeth with tuberculated crowns, as the pigs.

BUNSEN, *bŭn'sn*, CHRISTIAN KARL JOSIAS, Baron: 1791, Aug. 25—1860, Nov. 28; b. Korbach, in the principality of Waldeck, Germany: distinguished scholar and statesman. He studied philology at Göttingen (1809–13) under Heyne. He had been appointed teacher in the Gymnasium of Göttingen 1811, but quitted the position 1813; and in pursuance of a course of study of Old and Middle High German, begun in company with Lachmann, and to extend his knowledge of his Germanic tongues, he went to Holland, and afterward to Copenhagen, where he learned Icelandic from Fin Magnussen. The historical works of Niebuhr and his character as a politician had filled B. with enthusiasm, and he spent some months of 1815 in Berlin, to become personally acquainted with the historian. In 1816, he went to Paris, and studied Persian and Arabic under Sylvestre de Sacy, and in the same year to Rome, where he married. Niebuhr, then Prussian ambassador, took the greatest interest in the scientific pursuits of B., and procured (1818) his appointment as sec. to the embassy. The residence of the king of Prussia, Friedrich Wilhelm III., in Rome in 1822, had a decided influence on his subsequent career. In the course of a conversation in which B. had disagreed with the king, the latter asked his views on the Prussian ritual (*Agende*) and hymn-book question, then much agitated. Though these views were very different from what the king had been accustomed to hear, he took them in good part, and with expression of his personal regard, requested B. to continue in the state service. On Niebuhr's departure from Rome (1824), B. conducted the embassy provisionally for a time, and was then appointed resident minister (1827). Living in intimate intercourse with Niebuhr, B. had employed the time in deepening his investigation into the philosophy of language and religion; and had made, on the one hand the philosophy of Plato and the constitutions of antiquity, on the other biblical inquiries, church history, and liturgies—objects of special attention. Though not within the scope of the great plan of his life, he contributed largely to the *Beschreibung der Stadt Rom* (Description of Rome), 3 vols. (Stutt. 1830–43); the greater part of the topographical communications on an-

cient Rome, and all the investigations into the early history of Christian Rome, are by him.—The first visit of Champollion to Rome formed an epoch in B.'s antiquarian studies. He was a zealous hearer of Champollion himself, and also encouraged Lepsius (q.v.) to the study of hieroglyphics. The Archæological Institute, established 1829, found in B. its most active supporter. When he founded the Protestant hospital on the Tarpeian Rock (1835), he also built, adjoining his own house, a place of meeting for the Institute; and labored earnestly for the cause of Protestantism. The king of Prussia had often asked his advice concerning the ritual, but had not adopted it. B. then, with the chaplain, introduced (1825) into the chapel of the embassy at Rome a liturgy modelled after his own views, and sent a report (1828) to the king of the result. The king had this liturgy printed, and wrote the preface with his own hand. This work never came into the hands of the trade; but the most of it was embodied in the *Allgemeine evang. Gesang- und Gebetbuch*, printed (1846) without the author's name, in the Rauhe Haus, Hamburg, which may be considered as the second edition of the *Versuch eines allgemeinen evang. Gesang- und Gebetbuchs* (Attempt at a General Evangelical Hymn and Prayer Book), Hamb. 1833.

In 1841, he was sent on a spécial mission to London, to negotiate the erection of an Anglo-Prussian bishopric in Jerusalem, and was shortly afterward appointed ambassador at the English court. It is understood that, on occasion of a visit to Berlin 1844, he was asked to write down his views on the question of granting a constitution to Prussia; and that in consequence he presented a series of memorials representing the urgency for a deliberative assembly, and also made a complete plan of a constitution closely resembling the English. In the Schleswig-Holstein question B. strongly advocated the German view in opposition to Denmark, and protested against the London protocol of 1850. But in the midst of all his political duties, B. continued unabated his literary and philosophical pursuits, the results of which have from time to time appeared. His views regarding the part that Prussia should act in the Eastern question not being, it is understood, in accordance with those of his court, he ceased, 1854, to represent Prussia at the court of England, and retired to Heidelberg. B., as the most philosophical and most reverent of lay-theologians, rendered great services to the cause of enlightened Christianity. His chief works are: *De Jure Atheniensium Hereditario* (Gött. 1813); *Die Kirche der Zukunft* (The Church of the Future—trans. into English, pub. by Longman), Hamb. 1845; *Ignatius von Antiochien und seine Zeit* (Ignatius of Antioch and his Time), Hamb. 1847; *Die drei echten und die vier unechten Briefe des Ignatius von Antiochien* (The Three Genuine and the Four Spurious Epistles of Ignatius of Antioch), Hamb. 1847; *Ägyptens Stelle in der Weltgeschichte* (Egypt's Place in the World's History—trans. into English by Cottrell), Hamb. 1845-57; *Die Basiliken des Christlichen Roms* (The Basilicas of Christian Rome),

BUNSEN BURNER—BUNTER SANDSTEIN.

1843; *Hippolytus und seine Zeit* (Hippolytus and his Time), 1851; *Christianity and Mankind*, 1854; *Gott in der Geschichte* (God in History), 1857; and the *Bibelwerk*, 9 vols., 1858–69. B. died at Cannes. See *Memoir*, 1868, by his widow, the Baroness Frances B. (1791–1876); and her own *Life and Letters*, by Hare (1878).

BUNSEN BURNER, n. *bún'sn*- [from Robert Wilhelm Bunsen, a German chemist]: a burner and lamp contrived to give out an intense heat by the free admission of air.

BUNT, n. *bünt* [Dan. *bundt*; Sw. *bunt*, a bunch, a bundle]: the belly, or protuberance, or bagging part of a sail; a fungoid disease which attacks wheat. BUNTLINES, n. plu. ropes on the bottoms of sails to draw them upward.

BUNT: disease of wheat and other grains, or the parasitic fungus which causes that disease. The name B. is supposed, by some, to be a corruption of *burnt*, or at least from the same root, a derivation perhaps suggested by the analogy of *Brand* (q.v.). B. is also called *Pepper Brand*, and sometimes *Smut Ball*. It is one of the most common and injurious diseases of wheat, often affecting great part of a crop, though its prevalence has been greatly diminished by care on the part of farmers, and particularly by the selection of clean seed, and the dressing of the seed, before sowing, with some substance, which, without injuring its vitality, destroys that of the spores or granules of the fungus. Even washing with water has a good effect, but greater benefit is derived from dressing with salt, quicklime, chloride of lime, Glauber's salt (sulphate of soda), and quicklime, or blue vitriol (sulphate of copper). Even arsenic and corrosive sublimate are used for this purpose. B. is now believed to be propagated by any contact of sound with unsound grain; by thrashing, which causes the B. dust to fly about; or by manure in which the straw of infected grain has been mixed. Upon this belief, the means now adopted for its prevention are founded. A considerable mixture of B. is not supposed to render flour absolutely unwholesome, at least when made into fermented bread, but the bread is of a peculiar flavor, and a very dark color. It is said that such flour is largely used in the manufacture of gingerbread, the treacle disguising both the color and the flavor.

BUNTER SANDSTEIN, *bún'tér sánd'stīn*, or 'variegated sandstone' [see BUNTING]: the lowest member of the Triassic Period. As the triass is more perfectly developed in Germany than in Britain, the German beds are the typical group. The B. S. consists of various colored sandstones, interstratified with red marls and thin beds of limestone, which occasionally, as in the Harz, are oolitic, but in other places dolomitic. They attain a maximum thickness of 1,500 ft. The English representatives of the B. S. are developed chiefly in Lancashire and Cheshire, and consist of red and mottled sandstones with beds of marl, and thick, rather irregular bands of partially consolidated conglomerate called 'pebble beds.' Thirty species

BUNTINE—BUNTING.

of fossil plants have been found in the B. S. near Strasburg, chiefly ferns, cycads, and conifers. But the most remarkable fossils in this formation are the remains of huge batrachians. Originally, only the foot-prints of the animals on the moist sand were observed. From their resemblance to the impressions made by a human hand, the animal producing them was provisionally named *Cheirotherium* (q.v.). The subsequent discovery and examination of the remains of teeth and bones in the same beds, have afforded sufficient materials to enable Owen to reconstruct an animal named by him *Labyrinthodon* (q.v.), which undoubtedly produced the footprints. These remains have been detected in Lancashire and Cheshire, as well as in Germany.

BUN'TINE: thin woolen material: see **BUNTING**.

BUNTING, n. *bŭn'ting* [Ger. *bunt*, variegated: perhaps connected with Scot. *buntin*, short and thick: W. *buntin*, the rump]: a thin woolen cloth used for flags, and variously colored; a name for a genus of small birds, as *yellow bunting*, *corn-bunting*, *snow-bunting*. **BUN'TER**, n. *-ter*, in *geol.*, the lower Trias or New Red Sandstone; a party-colored sandstone.

BUNTING (*Emberiza*): genus of birds closely allied to finches and sparrows, and included with them by some ornithologists in the great family *Fringillidæ* (q.v.); but by others made the type of a distinct family, *Emberizidæ*, of which the most marked characteristics are a short, straight, conical bill; a curved form of the gape, produced by a narrowing of the sides of the upper mandible, and a corresponding enlargement of the under one, and a hard rounded knob on the palate or inner surface of the upper mandible. This knob probably aids in crushing the seeds, the principal food of these birds. The species of the B. family are numerous, and arranged in several genera. The true buntings (forming the restricted genus *Emberiza*) have the hind claw moderately short, curved, and strong, and the palatal knob large and bony. The **COMMON B.** or **CORN B.** (*E. miliaria*)—a bird considerably larger than a house-sparrow, brown, with darker streaks on the upper parts, whitish brown, with spots and lines of dark brown on the under parts, and with a slightly forked tail—is frequent, particularly in low cultivated grounds in most parts of Europe, extending also into Asia, living in pairs during spring and summer, but in flocks in winter, and often visiting barn-yards, at that season, with chaffinches and sparrows. It is the largest of the British buntings. It is supposed that the winter flocks in Britain are much increased by migration from more northerly regions. This B. often passes the night on the ground in stubble-fields, and is taken in the nets employed for catching larks, and brought with them to market. It usually builds its nest on or very near the ground. Its notes are harsh and unmusical.—The **REED B.**, or **BLACK-HEADED B.** (*E. Shoeniclus*), is a species common in marshy situations, in Europe; a very pretty little bird, with black head and throat,

BUNTING—BUNYAN.

strikingly contrasted with the white nape and sides of the necks.—The CURL B. (*E. Cirlus*), of which the head is olive-green, with black streaks, and with patches of bright lemon-yellow on the cheeks and over the eyes, belongs chiefly to the s. of Europe and the n. of Africa. To this genus belong also the ORTOLAN (q.v.) and the YELLOW-HAMMER (q.v.).—The SNOW B. (q.v.), or SNOWFLAKE (*E. nivalis* of many authors), has been placed in the new genus *Plectrophanes*. The name B. has been often vaguely used,



Common Bunting (*Emberiza miliaria*).

and many species have been almost indiscriminately called buntings or finches. The palatal knob affords the best distinctive character. N. America has a number of species of B.—The BLACK-THROATED B. (*E. Americana*) is extremely plentiful on the prairies of Texas and other s.w. parts of the United States; extending, however, as far as Ohio, and even Massachusetts. In the middle and northern states it occurs only as a summer bird of passage. In its habits it closely resembles the Common B. of Europe; but the palatal knob is less hard.

BUNTING, JABEZ: 1779–1858, June; b. Manchester, England: Wesleyan minister. At the age of 20, he devoted himself to ministerial work, in which he was very successful. He was elected pres. of the annual conference 1820, '28, '36, '44. In 1834, he was chosen pres. of the theo. institution belonging to the Wesleyan Meth. body, and he acted as one of the secretaries to the Missionary Soc. of his denomination, for more than 20 years. He was the chief authority in all matters relating to the government and polity of Wesleyan Methodism. On his retirement from official life, 1857, his friends presented him with an annuity of £200, in consideration of his great services.

BUN'YAN, JOHN: 1628–88; b. Elstow, near Bedford, England: one of the most popular religious writers of any age. He was brought up to his father's trade of tinker,

BUNZLAU.

and spent his youth in that humble craft. It has generally been taken for granted that his early life was loose and profligate, on the sole ground of his terrible self-accusations in after years, when, from the height of religious fervor and Puritan strictness, he looked back on dancing and bell-ringing as deadly sins. This point is satisfactorily disposed of by Macaulay (*Encycl. Britann.*, art. 'Bunyan'). In his 16th or 17th year he enlisted in the parliamentary army, and in 1645, was present at the siege of Leicester, where he escaped death by the substitution of a comrade in his place as sentry. Nothing further is known of his military career. After leaving the army he married, and soon began to be visited by those terrible compunctions of conscience and fits of doubt, sometimes passing into despair, which with some quieter intervals, made his life, for several years, a journey through that Valley of Humiliation, of which he afterward gave so vivid a picture. Hope and peace came to his soul at last, and in 1655, B. became a member of the Baptist congregation at Bedford. Soon afterward he was chosen its pastor, and for five years ministered with extraordinary diligence and success, his preaching generally attracting great crowds. The act against conventicles, passed on the Restoration, put a stop to his labors; he was convicted and sentenced to perpetual banishment. In the meantime, he was committed to Bedford jail, where he spent the next 12 years of his life; supporting the wants of his wife and children by making tagged laces, and ministering to all posterity by writing the *Pilgrim's Progress*. His library consisted of a Bible and Fox's *Martyrs*. He was at last released (but not by the interposition of a high-church bishop, as was formerly said), and he at once resumed his work as a preacher; itinerating throughout the country. After the issuing of James II.'s declaration for liberty of conscience, he again settled at Bedford, and ministered to the Baptist congregation in Mill-lane, till his death at London, of fever. B.'s whole works were published 1736, 2 vols. folio. The most popular of them, after the *Pilgrim's Progress*, are the *Holy War*—another allegory, much less successful—and *Grace Abounding to the Chief of Sinners*, an autobiographical narrative. It is supposed that no other book, except the Bible, has gone through so many editions, and attained so wide a popularity, in all languages, as the *Pilgrim's Progress*. A fac-simile reprint of the original edition of the *Pilgrim's Progress* was published 1875. A statue of B. stands at Bedford. See *Lives* by Philip (1839); Froude (1880); and John Brown (1886).

BUNZLAU, *bántz'low*: town of Prussia, in Silesia, on the Bober, 25 m. w.n.w. of Liegnitz. B. has manufactures of woollens, linens, hosiery, tobacco, and earthenware, and a trade in grain. An obelisk to the Russian general, Kutusow, who died here in 1813, adorns the market-place. Pop. (1880) 10,700; (1890) 12,921.

BUNZ'LAU, JUNG, or NEUE (*New Bunzlau*): town of Bohemia, on the left bank of the Iser, about 32 m. n.e. of

BUOL-SCHAUENSTEIN—BUOY.

Prague. B. is well built of stone, has an old castle, and manufactures of cotton, woolen, soap, leather, etc. It is said to owe its origin to King Boleslaf, 973; and the fort built by him is still shown. Its Bohemian name is *Mlada Boleslaw*. Pop. (1869) 8,695; (1880) 9,681; (1890) 11,532.

BUOL-SCHAUENSTEIN, *bó'ol-show'én-stān*, KARL FERDINAND, Count: 1797, May 17—1865, Oct. 28: Austrian statesman. After filling subordinate diplomatic posts, he became ambassador at Carlsruhe 1828, afterward at Stuttgart (1838) and at Turin (1844). Leaving Turin on the outbreak of the war, 1848, he went as ambassador to St. Petersburg, and it fell to him to uphold the interest and dignity of his country, on occasion of the aid given by Russia in the Hungarian war. A not less difficult task was assigned him when, 1851, he was sent to represent Austria in London; his address and conciliatory bearing contributed not a little to bring about a more friendly feeling between the two governments. On Schwarzenberg's death B. was recalled to Vienna, and became foreign minister. In this position, he carried out the new politics of Austria no less firmly and successfully, though more moderately and quietly than his predecessor. In the negotiations during and after the termination of the Crimean war, B. showed himself a skilful and able statesman. After defending with zeal and ingenuity, in diplomatic notes and circulars, the position which Austria had taken with reference to Sardinia, B. suddenly, on the actual commencement of the Italian campaign of 1859, resigned his place, which was immediately filled by Count Rechberg. Failing health was the cause officially assigned for the step, but the general belief was, that it indicated a triumph of the war-party in the council of Francis Joseph.

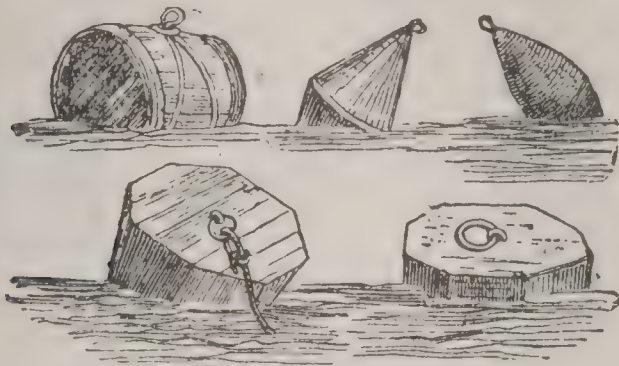
BUONAROTTI, MICHAEL ANGELO: see MICHAEL ANGELO.

BUOY, *n.* *bwōi* [Dut. *boei*; Sp. *boya*, the float of an anchor or of a net: Sp. *boyar*, to float: F. *bouée*, a buoy—from OF. *boye*—from mid. L. *boia*, a fetter, a clog]: an empty cask, or a small structure of wood, made for floating on the water, to point out shallows or rocks, etc.: V. to keep afloat; to bear up; to support; to sustain; to place buoys; to float. BUOY'ING, *imp.* BUOYED, *pp.* *bwōid*. BUOYANCY, *n.* *bwōi'-ān-si*, the quality of floating on water or in air; lightness. BUOY'ANT, *a.* floating; light; that cannot sink. BUOY'ANTLY, *ad.* *-li*. BUOY'ANTNESS, *n.* LIFE-BUOYS, articles to be thrown into the water when any person falls into such as the sea, to keep him afloat; a float.

BUOY: a floating body, intended as a mark for the guidance of mariners. It is made of wood or metal, and is mostly hollow. Buoys are usually moored by chains to the bed of the river or channel. They are of various shapes and sizes, and are painted of various colors, partly to render them conspicuous and partly to distinguish them one from another. Sometimes floating buoys mark out the best channel for entering a dock; some-

BUOYANCY—BUPRESTIS.

times they warn the mariner away from sands, spits, and shoals; sometimes they mark out a continuous double line, as at Spithead, between which is the only safe entrance for ships. The *bell-buoy* is an ingenious contrivance for rendering a B. audible, whether it is visible or not; so long as any stream of water, whether caused by a tide or a current, passes through the lower part of the



Various shapes of Buoys.

B., it moves an undershot water-wheel, which rings a bell.

The lighting of coast-buoys by means of compressed gas has been done of late. Experiment proved that buoys 5 ft. by 3 ft. could contain enough gas (made from shale-oil refuse or the like) to keep up a brilliant light for a month or more at a time.

BUOY'ANCY, of Ships: amount of weight which can be buoyed up by the hull. The B. of a vessel is proportionate to the weight of water displaced by its presence (see **HYDROSTATICS**), and the rule for finding it has been stated as follows: The cubic ft. of the part of a vessel to be immersed being known, multiply it by the weight of a cubic ft. of water (62.5 lbs.), and the product will be the weight of water displaced: from this subtract the weight of the vessel, and the result will be the B. or the weight that a vessel will carry without sinking lower than the given line. It is admitted, however, by naval architects, that all the old rules concerning B., displacement, and flotation, must undergo modification by the introduction of iron ships, paddle and screw propulsion, and the increased weight of broadside.

BUOY'-DUES: small sums payable in some countries by shipping for the maintenance of buoys.

BU'PHAGA: see **BEEFEATER**.

BUPRESTIS, *bū-prēs'tis*: Linnæan genus of coleopterous (q.v.) insects, now divided into a number of genera, and forming a tribe or family, *Buprestidæ*, of which some hundreds of species are known, most of them belonging to tropical countries, and remarkable for the splendor of their colors. The colors are generally metallic in their lustre, have frequently a burnished appearance, and are often beautifully iridescent. One of the largest species, *B. gigas*, is a native of Cayenne: it is about 2 inches long.

BUR—BURBAGE.

The English and other European species are all comparatively small. Most of the species spend the night on trees, shrubs, and other plants, flying about during the hottest part of the day. Some of them are popularly known as GOLDEN BEETLES. Plants are sometimes seen studded with them in the morning, as with gorgeous flowers. The



Buprestis Bicolor.

Larva of Buprestis Gigas.

golden *elytra* (wing-cases, see ELYTRA) of some species are used to enrich the embroidery of the Indian zenama; and the lustrous joints of the legs are strung on silken threads, and form necklaces and bracelets of singular brilliancy. The larvæ seem sometimes to be transported from one country to another in timber.

BUR, or BURR, n. *bér* [Dan. *borre*, a burdock: F. *bourre*, flocks or locks of wool: It. *borra*, any kind of stuffing: Gael. *bior*, a thorn, a prickle]: a rough prickly covering of the seeds of some plants; the seed-vessel of the burdock—the *Arctium lappa*, ord. *Compositæ*, sub-ord. *Cynārōcēph'ālæ*; the rough edge left by a tool in cutting metal. BURR-STONE, certain silicious rocks used as millstones—so named from their rough grittiness; also BURLSTONE, n. *bér'l'stōn*, or BUHRSTONE (q.v.). BUR-REED, a British plant with sword-leaves, found in ponds and ditches, of the genus *Spargā'nium*, ord. *Arācēæ*.

BUR, in an Engraving: slight ridge of metal raised on the edges of a line by the *graver* or the *dry point*. As the bur produces an effect like a smear, it is usually regarded as a defect, and scraped off. Some etchers, however, take advantage of it to deepen their shadows, and Rembrandt used it thus with telling effect.

BURANHEM, or BURUNHEM: see MONESIA BARK.

BURANO, *bó-rá'nō*: island and town of n. Italy in the Adriatic, about 5 m. n.e. of Venice. The island supplies a large proportion of the vegetables consumed in Venice. B. has some lace-manufactures, boat-building, and an extensive ropework, but the inhabitants are employed chiefly in fishing. Pop. of town (1891) 4,699.

BURBAGE, or BURBADGE, *ber'bij*, RICHARD: English actor: d. 1619; son of James B., an actor. He was the first licensed English actor (1574), and was for many

BURBOT—BURCKHARDT.

years associated with Shakespeare, and acted in leading characters.

BURBOT, n. *bër'böt* [F. *barboie*—from *barbe*, beard], (*Lota vulgaris*): fresh-water fish of the same genus with the Ling (q.v.), and of the same family with the Cod, Haddock, etc., *Gadidæ*. It is found in the Cam, the Trent, and other rivers of the eastern and midland counties of England, and in various parts of the n. of Europe, and at least as far s. as Switzerland; in Siberia and other parts of Asia, even, it is said, in India. In English rivers, it often reaches two or three lbs. in weight, but has been taken of eight lbs.; and in some parts of Europe it is said to reach 10 or 12 lbs. In appearance the B. much resembles the ling, but is rather thicker at the neck, and tapers rather more rapidly, although still of somewhat elongated form. It has two dorsal fins, the first short, the second very long, and a very long anal fin. It differs



Burbot.

from the ling in the form of the tail-fin, which is oval and slightly pointed; but agrees with it in having a single barbule on the lower jaw. It is of a yellowish-brown color, clouded and spotted with darker brown on the upper parts; the under parts lighter; the scales are small, and the whole body is covered with a mucous secretion. The flesh is white, firm, and of good flavor; 'and as the B. is in its nature extremely hardy, few difficulties present themselves in the way of their increase in quantity, while the value of the fish would amply repay the trouble or the cost of the experiment.'—*Yarrell*. The B. is capable of living for a long time out of water. It is commonly taken by trimmers and night-lines, as it feeds principally during the night. Its food consists of small fishes, worms, molluscæ, etc. Its liver yields an oil similar to cod-liver oil.

BURCKHARDT, *bërk'hârt*, JOHN LEWIS: 1784, Nov. 24—1817, Oct. 15; b. Lausanne, Switzerland: African traveller. In 1806 he went to London, and was introduced by Sir Joseph Banks to the African Assoc., which accepted his services to explore the route of Hornemann into the interior of Africa, and he embarked for Malta, 1809, Feb. 14. He had previously qualified himself for the undertaking by a study of Arabic, and by inuring himself to hunger, thirst, and exposure. From Malta he proceeded, under the disguise of an oriental dress and name, to Aleppo, where he studied about two years, at the end of which time he had become so proficient in the vulgar Arabic that he could safely travel in the disguise of an oriental merchant. He visited Palmyra, Damascus, Lebanon, and other remarkable places, and then went to Cairo, his object being to go

BURDEKIN—BURDEN.

thence to Fezzan, and then across the Sahara to Sudan. No opportunity offering itself for that journey he went to Nubia. No European traveller had before passed the Derr. In 1814 he travelled through the Nubian desert to the shore of the Red Sea and to Jeddah, whence he proceeded to Mecca, to study Islamism at its source. After staying four months in Mecca, he departed on a pilgrimage to Mount Arafat. So completely had he acquired the language and ideas of his follow-pilgrims, that, when some doubt arose respecting his Mohammedan orthodoxy, he was thoroughly examined in the Koran, and was not only accepted as a true believer, but also highly commended as a great Moslem scholar. In 1815 he returned to Cairo, and in the following year ascended Mount Sinai. The Fezzan caravan, for which he had waited so long, was at last about to depart, and B. had made all his preparations for accompanying it, when he was seized with dysentery at Cairo, which terminated his life in a few days, at the early age of 33. As a holy *sheik*, he was interred with all funereal honors by the Turks in the Moslem burial-ground. His collection of oriental MSS., in 350 vols., was left to the Univ. of Cambridge. His journals of travel, remarkable alike for their interest and evident truthfulness, were published by the African Assoc. B.'s inherent love of adventure was accompanied by an observant power of the highest order. His personal character recommended him to all with whom he came in contact, and his loss was greatly deplored, not only in England, but through Europe. His works are: *Travels in Nubia* (1819); *Travels in Syria and the Holy Land* (1822); *Travels in Arabia* (1829); *Notes on the Bedouins and Wahabis* (1830); and *Manners and Customs of the Modern Egyptians* (1830).

BUR'DEKIN: river in n.e. Australia, colony of Queensland; 350 m. in length. It has four mouths; the principal one, about two m. wide, discharges its water into Upstart Bay, under the name of Wickham river; two others enter Bowling Green Bay; and the fourth, Cleveland Bay. The soil of its deltas is well adapted to the cultivation of rice, tobacco, sugar-cane, and coffee. The natives in its region are more intelligent than their southern neighbors.

BURDEN, n. *bér'dn*—sometimes written **BUR'THEN** [*AS. byrthen*; *Icel. byrthr*, a load, a burden: *Ger. Bürde*, a burden—from *beran*, to bear]: something carried; a load; something grievous or oppressive; a ship's capacity for carrying (see **TONNAGE**): **V.** to lay on a load; to oppress. **BUR'DENING**, imp. *-dn-īng*. **BUR'DENED**, pp. *-dnd*. **BUR'DENER**, n. *-dn-ēr*, one who. **BUR'DENSOME**, a. *-dn-sūm*, grievous to be borne; fatiguing; oppressive. **BUR'DENSOMELY**, ad. *-lī*. **BUR'DENSOMENESS**, n. **PUBLIC BURDENS**, local rates and imperial taxes imposed upon the public (see **PUBLIC BURDENS**). **BURDEN OF PROOF**, in any dispute, or in a suit at law, the obligation which rests on one of the parties to prove his case—generally designated by the Latin phrase *onus proban'di* = the burden of proof.—**SYN.** of 'burdensome': heavy; weighty; ponderous.

BURDEN--BURDEN OF PROOF.

BURDEN, *n.* *bŭr'dn*, as in **BURDEN OF A SONG** [*F. bourdon*, the hum of a bee, the drone of bagpipes: Gael. *burdan*, a humming noise—from *burd*, a hum or buzz]: the bass or accompaniment to the treble; repeated words or sentiments at the end of each verse or division of a song; the ditty or undersong; the chorus; the refrain; the prevailing sentiment or story running through a song or other poetical composition; the main topic. *Note.*—This word, though spelled in same way, has no connection with *burden*, a load; nor does it primarily signify the current of sentiment with which a song is loaded.

BUR'DEN, in Scottish Law: any restriction, limitation, or encumbrance affecting either person or property: they are classed as either personal or real.

BURDEN, *bŕr'dn*, **HENRY**: 1791–1871; b. Dumblane, Scot.: inventor. He was reared on a farm; but early showed inventive genius, and after a course of study in mechanics, emigrated to America 1819, and settled at Troy, N. Y. His principal inventions are: an improved plow; a cultivator (1820); wrought-iron spikes (1825); a machine for making hook-headed spikes (1840), since used almost universally in the construction of railroads; a machine that makes 60 complete horseshoes per minute (1857). In 1822 he became agent of the Troy iron and nail factory, to which furnaces and rolling-mills were attached until the works were among the largest in the world; and B. became ultimately sole proprietor of them. He was a generous giver for benevolent purposes.

BURDEN OF PROOF, in Legal Procedure: obligation to establish by evidence certain disputed facts; and, as a general rule, this B. of P. lies on the party asserting the affirmative of the issue to be tried or question in dispute, according to the maxim *ei incumbit probatio qui dicit non qui negat*—that is, proof is incumbent on him who asserts, not on him who denies. The principle of the law is, that the B. of P. is on the party who would fail if no evidence were adduced on either side. Accordingly, it almost always rests on the plaintiff in an action, or on the party asserting the facts on which the result of the litigation must depend. In one case in England, tried before the late Baron Alderson, that learned judge laid down that the proper test was, *Which party would be successful if no evidence at all were given?* the B. of P., of course, falling on the party not in that position. This test has since been generally adopted and applied; but Mr. Best, in his learned work on the *Principles of Evidence*, improves on it by the suggestion, that in strict accuracy the test ought to be, 'Which party would be successful if no evidence at all, or no more evidence, as the case may be, were given?' a consideration on which the discretion and judgment of counsel frequently depend. But although such, in general, is the position of the plaintiff, it sometimes happens that the B. of P. is imposed on the defendant, in consequence of his having the affirmative of the material issue to be tried. It is to be noted that in a *civil* suit, when the assertion is

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seen to be probable, the obligation of the B. of P. does not lie: whereas in a criminal case no conviction can be had unless the evidence shows guilt beyond reasonable doubt.

It is this rule as to the B. of P. that demonstrates the real nature of the plea of *not guilty* in a criminal prosecution, and which divests that plea of the frequent objections of scrupulous sentimentalists; for the meaning of that plea is not necessarily an assertion by the prisoner that he is absolutely guiltless or innocent, but that he wishes to be tried, and that the B. of P. is on the prosecutor, while he has the presumption of innocence in his favor.—Besides the work referred to, see Starkie on the *Law of Evidence in England*, and Dickson on the same subject in Scotland.

BURDER, GEORGE: 1752, June—1832, May; b. London: Congregational minister. After studying as an artist he devoted himself to the ministry, and in 1778 was appointed pastor of an Independent Church at Lancaster. He afterward removed to Coventry, and 1803 to London. Here he became sec. to the London Missionary Soc., and editor of the *Evangelical Magazine*. B. was greatly esteemed, and was prominent in all the religious movements of his time. His *Village Sermons* have been translated into several European languages; and he was the author of other series of sermons and publications which have had immense circulation.

BURDETT, Sir FRANCIS, Bart.: 1770, Jan. 25—1844, Jan. 23: popular English politician. Educated at Westminster School and Oxford Univ., he spent some years on the continent, and was a witness to the progress of the first French Revolution. In 1793 he married Sophia, youngest daughter of Thomas Coutts, Esq., the wealthy London banker, and in 1796 was elected M.P. for Boroughbridge, Yorkshire. In 1797, on the death of his grandfather, he succeeded to the baronetcy. In the house of commons he was conspicuous by his opposition to government and the war, and his advocacy of parliamentary reform, Roman Catholic emancipation, and other liberal measures, most of which were afterward carried. One of the most effective political speakers of that excited period, he for many years prominently occupied public attention, and was the favorite of the London populace. Having succeeded in obtaining a parliamentary inquiry into the abuses of the metropolitan prisons, he became, 1802, a candidate for Middlesex. He was first returned, then unseated, and after a second contest, defeated. At the general election of 1806, B. again became a candidate for Middlesex, but was defeated. In 1807, May, he fought a duel with Mr. James Paull, one of the candidates for Westminster the previous year. Soon afterward he was returned, with Lord Cochrane, for Westminster, which he represented for nearly 30 years. B. having in 1810 published, in Cobbett's *Political Register*, a Letter to his Constituents, declaring the conduct of the house of commons illegal in imprisoning John Gale Jones, the speaker's warrant was issued for his apprehension, as being guilty of a

breach of privilege. Refusing to surrender, he for two days barricaded his house, the populace supported him in his resistance, and in a street contest between them and the military some lives were lost; but on April 9, the sergeant-at-arms, aided by the police and military, obtained an entrance, and conveyed him to the Tower. The prorogation of parliament restored him to liberty. Prosecuted, 1819, for a libel contained in a Letter to his Constituents, strongly animadverting on the proceedings of the magistrates and yeomanry at the memorable Manchester meeting, he was sentenced to three months' imprisonment in the King's Bench, and to pay a fine of £1,000. In 1835 he deserted the liberal party and joined the conserv. In 1837 he was returned for Wiltshire. Died in London.

BURDETT-COUTTS, ANGELA GEORGINA, *baroness*: dau. of Sir Francis Burdett; b. 1814, Ap. 21. She inherited a large fortune from her grandfather, Thomas Coutts, in 1837, which she devoted to works of philanthropy. She spent large sums of money in bldg. and endowing chs. and schs.; endowed the three col. bishoprics of Cape Town, Adelaide, and Brit. Col.; founded in S. Australia an estab. for the improvement of the aborigines; org. Turkish Compassionate Fund 1877; pres. several handsome fountains to London, and built Columbia Sq., consisting of model dwellings for about 300 families at low rents. She accepted a peerage, 1871, and in 1881 was married to William Ashmead-Bartlett.

BURDICK, FRANCIS MARION: an Amer. jurist and legal writer; b. 1845, Aug 1, in De Ruyter, N. Y.; was grad. at Hamilton Coll. 1869, and at its law school 1872; prac. in Utica, N. Y., 1872-83; was Prof. of Law at Hamilton Coll. 1882-87; at Cornell Univ. Sch. of Law 1887-91; mayor of Utica 1882-83; U. S. Assay Com. 1889; and Prof. of Law, Columbia Uni. 1891. His writings include *Burdick's Cases on Torts*; *Cases on Sales*; *The Law of Sales*; etc.

BURDOCK, n. *bér'dök*, or BUR-WEED, n. [*bur*, and *dock*], (*Arctium*): genus of plants of the great nat. ord. *Compositæ* (q.v.), tribe *Cynurocephalæ*. The heads of flowers are globose, or nearly so; and each of the scales of the involucre runs out into a long rigid prickle, which is hooked at the point. By means of these hooks the flower-head, popularly called a *bur* (q.v.), readily lays hold of the clothes of a passer-by, the wool of a sheep, or the like, and thus the seeds are transported from one place to another, the short hairy pappus being insufficient to waft them far on the wind. The common B. (*A. Lappa*), of which varieties very slightly distinguished have sometimes being described as species (*A. Bardana*, etc.), is abundant in waste and bushy places, by waysides, etc., throughout Europe where soil is rich. Its root is biennial, large, and fleshy, somewhat carrot-shaped; the root-leaves large, stalked, heart-shaped; the stem, stiff, upright, somewhat branched and leafy, three ft. or more high. The whole aspect of the plant is coarse, and it is somewhat clammy to the touch. The root is sometimes used in medicine,

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being diaphoretic and diuretic, and acting upon the cutaneous system and the kidneys. It is capable of being made a substitute for sarsaparilla. When fresh it has a disagreeable smell, but when dry, it is inodorous; it has a sweetish mucilaginous taste, becoming afterward bitterish and rather acrid, and contains chiefly inuline, bitter extractive, mucilage sugar, and a little tannin. In many countries, the roots, young shoots, and young leaves of *B.* are used in soups; and the plant is cultivated for this use in Japan. The roots are said to resemble artichokes in taste. The leaves and their expressed juice are sometimes applied to burns and suppurations.

BURDWAN, *bŭrd-wân'*, or BARDWAN: city in the dist. and division of the same name in the govt. of Bengal, on the East Indian railway, 67 m. from Calcutta. It is miserably built, and since 1863, has suffered severely through fever. It contains a palace of the Maharajahs, and a large collection of temples. Pop. about 35,000.

BURDWAN, the district of which the above city is the administrative headquarters, is between Beerbhoom on the n., and Hoogly on the s.; 2,697 sq. m.; 512 inhabitants to the sq. m.—a proportion which certainly seems to justify its name that signifies *productive*. The dist. is largely engaged in the refining of sugar. It exports silk, rice, tobacco, jute, also iron and coal; the minerals brought chiefly from the mines of Bancoorah, the dist. on the w. Next to the capital, Culna, Syambazar, Raniganj, and Jahanabad are the chief towns. Pop. of dist. about 1,391,823.

The *division* of BURDWAN comprises 13,855 sq. m.; pop. about 7,393,954.

BUREAU, n. *bŭ'rō*, BUREAUS, or BUREAUX, n. plu. *bŭ'rōz* [F. *bureau*, a writing-table—from OF. *bure*, a reddish-brown—from mid. L. *burra*, rough red-cloth—the kind of cloth which covered the table]: a coarse woolen cloth, made from brown fleece, covering a table; a table or chest of drawers with conveniences for writing and keeping papers; in the *United States*, a chest of drawers for keeping clothes, etc.; in *France*, the office of an ambassador, state secretary, etc., for business; the whole staff officers of a department. BUREAUC'RACY, n. *-rōk'ră-sĭ* [F. *bureau*, and Gr. *kratēō*, I govern]: the system by which the public service of a country is carried on in departments, each one under the control of a head; government by or under the influence of officials; red-tapism: a style of government exemplified in some European states, where a host of government officials, regularly organized and subordinated, and responsible only to their chiefs, interfere with and control every detail of public and private life—the evil which the Germans call 'much-government' (*vielregieren*). BU'REAUCRAT'IC, a. *-rō-krăt'ĭk*, relating to or having the form of a bureaucracy; also BU'REAUCRAT'ICAL. BU'REAUCRAT'ICALLY, ad. *-lĭ*. BUREAUC'RATIST, n. *-rōk'ră-tĭst*, an advocate for or supporter of.

BURETTE, n. *bŭ-rĕt'* [F., a cruet, a vase]: a graduated

BURG—BURGAGE TENURE.

glass tube with stop-cock for delivering measured quantities of liquids.

BURG, or **BURGH**, n. *bérg*—**BURGH**, n. in Scot. *bŭr'ă*; also **BOROUGH**, *bŭr'ō*, which see [AS. *burg*; mid. L. *burgus*, a small fortified place]: at first the fort or castle for the protection of the *burgh*, then a fortified town; a city or corporate town that sends, or unites in sending, a member to parliament; a town with certain privileges. **BURGHAL**, or **BURGAL**, a. *bérg'ăl*, of or pertaining to a city or corporate town. **ROYAL BURGH**, a town holding a charter from the crown. **BURGH OF BARONY**, one erected by a feudal lord or superior.

BURG, *bérg*: walled town of Prussia, province of Saxony; on the Ihle, about 13 m. n.e. of Magdeburg. It has long been famous for its extensive woollen manufactures. It has manufactures also of linen, yarn, steel, pottery, and leather; dye works, distilleries, foundries, etc., and a large trade in agricultural produce. Pop. (1890) 17,572.

BURGAGE, n. *bérg'āj* [mid. L. *burgāgĭŭm*, an annual tax paid by the inhabitant of a *bourgh* or *burgh* for his property to the superior or lord—from *burgus*, a small fort: Gr. *purgos*, a tower]: a tenure of an ancient annual payment by which property is held in cities and towns. **BURGESS**, n. *-jēs* [OF. *bourgeois* and *burgeis*, a citizen—from mid. L. *burgen'sis*, the dweller or freedman in a *bourgh*]: a citizen or freeman of a city or corporate town. **BURGESS-SHIP**, n. the state or quality of a burgess. **BURGHIER**, n. *bérg'ér*, the freeman or inhabitant of a burgh; one of a religious sect in Scotland. **BURGH'ERSHIP**, n. **BURGEOIS**, n. *bŏr-zhŏá'* [F.]: a burgess. **BURGEOIS**, or **BOURGEOIS**, n. *bér-joys'*, a small printing type. **BURG-MOTE**, n. *bŭrg'mŏt* [AS. *burg* or *borough*; *mot*, meeting]: in AS. times, a borough court.

BURGAGE TENURE, *bérg'āj*: species of holding in the law of real property which prevailed both in England and Scotland, though with some differences. In England it is a species of free *socage* (q.v.) holding, and prevails where the king or other person is lord of an ancient borough in which the tenements are held by a certain and determinate rent, and subject to a variety of customs, the principal and most remarkable of which is that called *Borough English* (q.v.). Among the other customs was a law that the wife shall be endowed with all her husband's tenements, and not with the third part only, as at common law.

In Scotland, by this tenure is meant a peculiar sort of military holding affecting property in royal burghs, the sovereign being superior or over-lord, and each individual proprietor or burgess holding direct of the crown, for the *reddendo* or service of *watching and warding* (q.v.). This service, otherwise termed 'service of burgh used and wont,' is now merely nominal. Although the burgesses hold immediately of the crown, they do not receive their formal entry directly from the sovereign, but from the magistrates of the burgh, as the crown's commissioners. If the burgh, as such, ceases to exist, the crown does not thereby lose its

BURGANET—BÜRGER.

rights over the proprietors, for they continue as crown vassals (q.v.). See TENURE of LAND.

BURGANET, n. *bér'ga nět*, or BUR'GONET, n., or BURGUINET, n. *bér'gĩ-nět* [OF. *bourguignote*: Sp. *borgonota*]: in *OE.*, a sort of helmet — so named as first used by *Burgundians*.

BURGAS, or BURGHAS, *bôr gâs'*: town of Turkey, province of Eastern Roumelia, on a promontory in the Black Sea, about 76 m. n.e. of Adrianople. B., which is well built and clean, has manufactures of pottery of superior kind, and a good trade in agricultural produce. Pop. about 6,000.

The Gulf of Burgas, at the head of which the town is situated, is about 14 m. in length; depth from 5 to 12 fathoms.

BURGDORF, *bûrg'dorf* (Fr. *Berthoud*): town, railway-station in Switzerland; on the Emme; 14 m. n.e. of Bern, more than 1,800 ft. above the sea. B. was directly governed by the magistrates of Bern, 1384–1798. B., which comprises an upper and lower part, has a fine town-house, a castle dating from the 7th c., in which Pestalozzi established his celebrated school 1798. It has an active trade, and manufactories of cloth, ribbon, and tobacco. Pop. (1870) 5,078; (1880) 6,581; (1888) 6,875.

BURGEE, n. *bér'jē*: a kind of small coal suitable to be burned in the furnaces of engines; a flag ending in two points. It is used in cutters, yachts, and merchant vessels.

BUR'GEO ISLANDS: a group belonging to England; between Newfoundland and Cape Breton, lat. 47° 33' n., long. 57° 44' w. Besides being valuable as a fishing-station, they occupy a commanding position with respect to British N. America in general and the Gulf of St. Lawrence in particular. The group has 700 inhabitants.

BURGEAIS: see under BURGAGE.

BURGEON, v. *bér'jûn*: see BOURGEON.

BÜR'GER, GOTTFRIED AUGUST: 1748, Jan. 1—1794, June 8; b. Molmerswende, near Halberstadt, Prussian Saxony: popular German poet. In his boyhood, he showed no capacity for hard study, and was particularly averse to Latin; yet he had a relish for verse, though destitute of any other model than the Psalm-book. In 1764, he went to Halle, and applied himself to theology. In 1768, he turned to jurisprudence, which he studied at Göttingen. Here his conduct was careless and immoral, and he would probably have sunk into obscurity, if the intimacy which he happily formed with Voss, the two Stolbergs, and other young poets, had not stirred up his better nature, and inspired him with ambition to excel. He labored hard at the classics of ancient and modern times, but the study of Shakespeare and Percy's *Reliques* had the greatest influence in deciding his poetic style. Regarding the intrinsic merits of his poems, chiefly ballads and songs, even German critics—such as Schiller, Gervinus, and Vilmar—differ widely; but all agree in praising the popular

BÜRGERMEISTER—BURGESS.

style and fluent, spirited versification of his ballads, *Leonora*, *Lenardo and Blandine*, the *Parson's Daughter of Taubenhayn*, the *Wild Huntsman*, etc. B.'s life was spent in great poverty and misery, partly the result of misfortune, and partly of his own errors. He married thrice, in two instances very unhappily; lost his property by an unfortunate speculation; and though the favorite poet of the German people, was left to earn his bread by translations and similar literary labors. Though a popular writer B. was very careful as to style, and was one of the first who wrote good hexameter verse in German. Since 1798 there have been numerous complete and partial editions of his works. See B.'s life by Döring (1826), and by Pröhle (1856).

BÜRGERMEISTER: German term for **BURGO MASTER** (q.v.).

BUR'GESS, or **BURGH'ER** [from the same origin as borough (see **BUR GAGE**)]: in a very general sense, a citizen; but has a variety of special meanings, according to local institutions. In French literature, the word *bourgeois* is generally used to personify the excess of plebeian vulgarity; while on the other hand, in England, the aristocratic member of parliament for a city is technically called a burgess. In almost all parts of Europe, when used in a technical sense, the word means a person who holds some peculiar privilege in a town or municipal corporation. The burgesses of the European towns, indeed, were, and still nominally are, an interesting relic of ancient Roman institutions, existing in contest and rivalry with the institutions of feudality. The B., with a different name, is virtually the *civis* or citizen of the Roman municipality. It was a rank always of some moment, but especially valuable when the citizenship was of Rome, the metropolis. The apostle Paul, when he was to be scourged, raised the alarm of the chief captain by stating that he was a Roman. Such an event might often have happened in the middle ages, when a B., brought before the court of a feudal lord, claimed the privilege of pleading in his own burghal court, or the king's tribunal. The European monarchs found it their interest to support the burgesses as a check on the influence of the feudal aristocracy; and thus was nourished the great system of city communities, which have exercised so important an influence on the fate of the world. See **MUNICIPALITY**.

In the law of England a B. is a member of the corporation of a corporate town, or he may be described as a freeman duly admitted as a member of the corporate body. This privilege was, and to some extent still is, acquired by birth or servitude—that is by being born of a freeman, or by apprenticeship for seven years within the borough to a freeman. Formerly it might be obtained also by gift or purchase: see **TOWN-COUNCIL**.

In the Scotch law the old definition of B. is still maintained. This is very similar to the old English one above mentioned, with the addition of admission to the privilege *by election of the magistrates of the burgh*—the burgesses

BURGESS LIST—BURGH.

taking, on the occasion of their admission, a quaint form of oath, in which they confess the religion of the country, loyalty to the queen, to the provost and bailies of the burgh and their officers, and declaring *inter alia*, that they will 'make concord where discord is, to the utmost of their power.'

BURGESS LIST AND BURGESS ROLL: lists made under the provisions of the Municipal Corporation Act in Britain, showing the names of the burgesses entitled to vote for councilors, assessors, and auditors of the borough.

BURGH, BURGHAL: see under **BURG**.

BURGH [see **BURG**]: descriptive name of towns and cities in Scotland, corresponding to the English word *Borough* (q.v.). There were *burghs of barony*, *free burghs*, *burghs of regality*, and *royal burghs*. Since 1832, there have been what are called *parliamentary burghs*—that is, towns or burghs not being royal burghs, but sending or contributing to send representatives to parliament. By the general police act for Scotland, the word **B.** was declared to mean also any populous place, the boundaries of which are fixed by the act.

BURGHs OF BARONY are corporations consisting of the inhabitants of determinate tracts of ground within the *Barony* (q.v.), and municipally governed by magistrates, whose election is either dependent on the baron or lord of the district, or vested in the inhabitants themselves. Sometimes their charter of incorporation gave them power to create subordinate corporations and crafts, as in royal burghs; but all exclusive privileges of trading in burghs are now abolished. In other respects, the general corporate law of the country applies to burghs of barony; as to which see below, **BURGHs, ROYAL**. They have power to administer their common good, to elect their burgh-officers, to make bye-laws, and their burgesses are entitled to challenge the sale or other disposition of the burgh's property.

BURGHs, FREE, were burghs of barony enfranchised by crown charter with rights of trade, both home and foreign, but subjected to the same class of public burdens and taxation which royal burghs had to bear as the price of their peculiar privileges. Since the gradual decay and ultimate suppression of commercial monopoly, this class of burghs has become extinct, or rather *all* burghs are now *free*.

BURGHs OF REGALITY were burghs of baronies, spiritual or temporal, enfranchised by crown charter, with regal or exclusive criminal jurisdiction within their own territories, and thence called *regalities* (q.v.). Some of these burghs of regality, especially those dependent on the greater bishops and abbots, were of high antiquity, and possessed jurisdiction and privilege of trade distinguishable from those of royal burghs, only by being more circumscribed in their limits. Since the abolition of hereditary jurisdictions, the distinction between burghs of regality and burghs of barony has practically ceased.

BURGH ACRES—BURGLARY.

BURGHs, ROYAL. A royal burgh is a corporate body deriving its existence, constitution, and rights, from a royal charter—such charter being either actual and express, or presumed to have existed, and by the accident of war and time, to have perished. In 1833, by act of parliament, a new constitution was given to royal burghs in Scotland, excepting a few in which the population was very small. This new establishment abolished the ancient ‘close system.’ By a later act ‘burgh’ is defined to mean all burghs and populous places whose boundaries have been fixed; and it is provided that the sheriff may fix the boundaries and so constitute a burgh in this sense, for purposes of improvement and police, at the instance of seven or more householders.

BURGH ACRES: acres or small patches of land lying in the neighborhood of *Royal Burghs* (q.v.), usually feued or leased out to burgesses or persons resident within the burgh.

BURGHERS: name popularly given to a religious denomination in Scotland: see **UNITED PRESBYTERIAN CHURCH**.

BURGHs, CONVENTION OF: see **CONVENTION OF ROYAL BURGHs**.

BURGKMAIR, *bûrk'mîr*, **HANS:** 1473–1531; b. Augsburg: noted German painter and wood-engraver. He was father-in-law of the elder Holbein, and friend of Albert Dürer, whose influence is manifest in B.'s works. Several excellent paintings by B. are in the galleries of Munich, Berlin, Augsburg, and Vienna. But he is best known as a wood-engraver, his cuts amounting to nearly 700. Among the most celebrated of these is his *Triumph of the Emperor Maximilian*, in 135 cuts, with a description by the emperor himself. Another fine series of 237 cuts, called *The Wise King*, represents the deeds of Maximilian. He died at Augsburg.

BURGLAR, n. *berg'ler* [Norm. F. *bourglair*—from mid. L. *burgi-latro*, the robber of a dwelling: comp. Gael. *buarglacair*, a cattle-thief—from *buar*, cattle; *glac*, to seize]; one who breaks into a house at night to steal; a house-breaker. **BURGLA'RIOUS**, a. *-lă'rî-ûs*, pertaining to a theft by housebreaking. **BURGLA'RIOUSLY**, ad. *-lî*. **BURG'LARY**, n. *-lêr-î*, the breaking into a house by night for the commission of robbery.

BURG'LARY: in criminal law, a breaking and entering the house of another in the night, with intent to commit some felony within the same, whether such intent be executed or not. It is peculiar to this crime that it can only be committed in the *night-time*, which, by an English law, is considered as commencing at nine in the evening, and concluding at six in the morning of the next day. As to the *place* of commission, B. must be in a *mansion-house*, for such is the technical expression; but this is construed to mean any private dwelling, or any building temporarily or permanently used for that purpose. Generally, it cannot be committed in a distant barn, warehouse, or the like,

BURGLARY.

unless there be a communication with the dwelling-house, nor in a house where no one resides; though it may be committed in a store over which the owner resides (and in some states in a stable, or a railroad station). But it is B. to break into a house which is used as an occasional residence, and which the owner, is in the habit of leaving for a short period, with the intention of returning, even though no one be in the house at the time of the offense. A chamber in a college, or an inn of court, is also within the meaning of a mansion-house; so likewise is a room or lodging in any private house (according to the law in some states), if the owner and the lodger enter by different outer doors; but if they both enter by one outer door, then the house is described as that of the owner; and the case is similar of a building belonging to a corporation and separately inhabited by the officers of the body corporate; it is the mansion-house of the corporation, and not of the officers. Again, a shop which is part of another man's house, and hired merely for the purpose of work or trade, is not a dwelling-house, yet the law defines the crime of B. as possible in it, though the punishment is not quite so severe. This offense cannot be committed in a tent or booth erected in a market or fair, though the owner may lodge therein, for his doing so makes it no more B. to break open such an erection than it would be to uncover a tilted wagon under the same circumstances. But it may be committed by breaking open a church, which, according to Sir Edward Coke, is *domus mansionalis Dei*, that is, the mansion-house of God, and is now expressly protected.

As to the *manner* of committing B., it is laid down by Blackstone that there must be both a breaking and an entry to complete it. There must, in general, be an actual breaking, a substantial and forcible irruption—as, at least, by breaking, or taking out the glass of, or otherwise opening a window; picking a lock, or opening it with a key; nay, by lifting up the latch of a door, or unloosening any other fastening, or (in some states) tearing out a netting of twine nailed over an open window. But if a person leave his doors or windows open, without any barrier, however slight, to indicate that entrance is not to be made thereat, it is his own folly and negligence, and if a man enter therein it is no B.; yet if he afterward unlock an inner or chamber door, it is so. To come down a chimney is held a burglarious entry, for that is as much closed as the nature of things will admit; so also to knock at a door, and upon its being opened, to rush in with a felonious intent; or, under pretense of taking lodgings, to fall upon the landlord, and rob him. The least entering, with only a part of the body, such as head, hand, or foot, constitutes the crime of B. If the servant conspire with a robber, and let him into the house by night, this is B. in both.

The *intent* must also appear, otherwise the offense will amount only to a trespass; and it must be an intent to commit felony, which may be inferred from the conduct of the offender while in the house.

BÜRGLEN—BURGOS.

In the different states of the United States the common-law definition of burglary as a felony has been variously modified by statute. Thus, in Massachusetts, the crime is called 'breaking and entering;' in New York it is divided into degrees, of which there are three, the distinction between them being very technical: as, for instance, whether the crime be committed in the day or night time; whether forcible entry of premises be made with the intent to commit the crime, or whether its commission be an afterthought, through the criminal's finding himself within the premises, etc. The punishment for B. varies in different states as to the term, but in each state it consists of imprisonment. In New York, B. in the first degree is punishable by imprisonment in a state prison for not less than ten years; B. in the second degree, not more than ten nor less than five years; and B. in the third degree not exceeding five years. In states where B. is defined as a felony committed at night (as in Connecticut), it has been held that the production of an almanac to show the hour at which the sun set on the day of the commission of the crime, is admissible, not exactly as evidence, but to refresh the memory of witnesses. In some states, however, B. is commissible in the daytime as well as at night, while in other states breaking into premises, with the intent to commit any crime, is defined as burglary.

Blackstone observes, that this offense was anciently called Hamesecken, as, he adds, it is in Scotland to this day. But the Scotch law on this subject has some points of difference—hamesecken, or hamesucken (in the Scotch books), not being quite identical with B.: thus, the former is an offense exclusively against the *person*, and it may be committed in the daytime, as well as at night; and there are other points of dissimilarity. The Scotch law relating to *housebreaking* and *stouthrief* affords analogies. See HAIMSUCKEN: HOUSEBREAKING: STOUTHRIEF: LARCENY: ROBBERY: ASSAULT.

BÜRG'LEN: village of Switzerland, canton of Uri, about two m. from Altorf; celebrated as the birthplace of William Tell. The supposed site of the patriot's house is now occupied by a chapel, upon the walls of which are represented certain well-known scenes from his history. Pop. about 1,500.

BURG MOTE: see under BURGAGE.

BURGOMASTER, n. *ber'gō-mäs'tēr*, or BURGH'MASTER [Ger. *bürgermeister*, a burgomaster, a mayor—from *bürger*, a burgess; *meister*, a master]: one employed in the government of a city; chief magistrate in the large towns of Holland, etc., analogous to the French *maire*, the English *mayor*, the Scotch *provost*; a name given to a kind of large sea-gull. See GULL.

BURGONET: see BURGANET.

BURGOS, *bór'gōs*: city of Spain, cap. of the new province of B., and of the former kingdom of Old Castile; in

BURGOUT—BURGOYNE.

a fertile valley at the foot of the Sierra d'Oca, and on the right bank of the river Arlanzon; lat. 42° 20' n., long. 3° 45' w. B. is very ancient, having been founded 844. Many of the gloomy old houses of its early history remain. In the castle of B. Edward I. of England was married to Eleanor of Castile. The cathedral of B., founded 1221, is one of the noblest specimens of Gothic architecture in Spain. Its various chapels are rich in fine sculpture and tombs. It was the birthplace of the Cid (q.v.). B. has manufactures of woollens, linens, and hats, but it depends chiefly on the traffic which its position on the great road from France and the n. Spanish provinces to Madrid secures. B. has several charitable and educational institutions. It formerly had a much larger population—as many as 50,000—but on the removal of the court to Madrid in the 16th c., B. began to decline in population and importance. It was further greatly injured 1808, Nov., by the French, who sacked it. In 1812, the castle was four times unsuccessfully besieged by Wellington, who, however, took it in the following year when the French blew it up, as well as the fortifications. Pop. (1900) 30,167.

The province of BURGOS has 5,650 sq. m. The surface is elevated, the soil fertile, yielding grain and fruits. The hills afford rich pasturage; and gold, silver, iron, lead, and copper are found. Pop. (1900) 338,838.

BURGOUT, n. *bēr'gút*, or BURGOO, n. *bēr-gó'* [W. *burym*, yeast; *gawl*, gruel]: thick gruel used by seamen, seasoned with salt and butter.

BURGOYNE, *bēr-goyn'*, JOHN: British general and dramatist: 1730–92; commonly said to have been natural son of Lord Bingley. He entered the army early, and, 1759, Aug., was appointed lieut.col. commandant of the 16th Light Dragoons. In 1761, he served at Belle Isle, and in 1762 commanded a force sent into Portugal for the defense of that kingdom against the Spaniards, when he surprised and captured Alcantara. In 1776, he served in N. America in the war of the Revolution, and in the summer of 1777 he was appointed to the command of a large force ordered to penetrate from Canada into the rebellious districts. The early part of the expedition was marked by his capture of Ticonderoga; but neglecting to preserve his communications with Canada, he encountered the greatest difficulties, and was at last forced to surrender with his army to General Gates, at Saratoga. Soon after his return to England, having been denied an audience of the king, and refused a court-martial, he went over to the opposition party, and voluntarily resigned all his appointments. On a change of ministry, at the close of the American war, he was appointed commander-in-chief in Ireland. This office he resigned two years later, and subsequently seems to have devoted his time to light literature. He was the author of some pamphlets in defense of his conduct, and of *The Maid of the Oaks* (1780), *The Heiress* (1786), and other stock dramatic pieces. B. was one of the managers for conducting the impeachment of Warren Hastings. See

BURGOYNE—BURGUNDY.

Episodes from the Life and Letters of B., by Barrington and Fonblanque (1876).

BURGOYNE, Sir JOHN FOX, Bart: 1782, July 24—1871, Oct. 7; natural son of Gen. John B. He entered the Royal Engineers 1798; served in the Mediterranean 1800–07; was with Moore at Corunna 1809; and served under Sir Arthur Wellesley in the Peninsula till the conclusion of the war in 1814, being present at all its sieges. In 1814, he was commanding engineer of the expedition to New Orleans, and in 1826 of that sent to Portugal. In 1851 he obtained the rank of lieut.gen., and in 1854 was made D.C.L. of Oxford Univ. In the Crimean war he was chief of the engineering dept. of the British army till recalled 1855. For his services at Sebastopol, he received from the sultan the order of the Medjidie, and from the French emperor that of grand officer of the Legion of Honor. He was made general 1855, baronet 1856, constable of the Tower in 1865, and field-marshal 1868. See his *Life and Correspondence* (2 vols. 1873).

BURGUNDY, *bér'gŭn-dĭ*: a formerly independent kingdom of wide extent, later an old French province (Fr. *Bourgogne*), now divided between the depts. of Côte-d'Or, Saone-et-Loire, and Yonne. The ancient Burgundians (*Burgundi*), originally a German tribe, were at first settled on the banks of the Oder and the Vistula, afterward extended themselves to the Rhine and the Neckar, and, in 407 penetrated into Roman Gaul. Their conversion to Christianity took place in the course of eight days, and consisted in their adoption of a brief Arian confession of faith, and receiving baptism. From 407 to 534, the kingdom of B. was several times divided; and in 451, Gundicar, King of B., with 10,000 men, confronted Attila, but was defeated and slain.

In 534, B. passed under the rule of the Franks; but the weak government of the later Carlovingian kings allowed a part of it once more to assert a separate existence as a dependency of the empire under Boso of Vienne in 832. Boso's realm, known as Cisjuran B., or the kingdom of Arelate (Arles) lay mainly in the basin of the Rhone. A second Burgundian state arose about the same time in the country between the Saone and the Reuss, and was known as Transjuran or Upper Burgundy. These states, united in 930, were for a time powerful and famous; but in 1038, on the extinction of the royal dynasty, B. became part of the German empire. It was afterward broken into several fragments, gradually absorbed by France.

A similar fate befell the third Burgundian state, the dukedom of B. or Lower B., formed by a brother of Boso. Yet the Dukes of B. played a large part in the history of mediæval Europe, and were long the dangerous rivals of the French kings. The nucleus of the dukedom was in Lower B., which afterward became the French province of B., n. and w. of the other Burgundian realms; but the second line of dukes, beginning, 1363, with Philip the Hardy, son of the French king John, held under their

BURGUNDY—BURGUNDY PITCH.

sway not only Franche Comté and adjoining portions of France proper, but great part of the Low Countries. Charles the Bold (q.v.) was one of the most powerful sovereigns of Europe. Louis XI. of France succeeded in incorporating the duchy with the kingdom of France.

BURGUNDY, LOUIS, Duke of: 1682–1712; b. Versailles; grandson of Louis XIV. of France, and Dauphin of France after the death of his father. Even in childhood he was ungovernable, and became excessively violent and haughty, and abandoned to all gross and sensual passions. Although educated under the care of the Abbé Fénelon, he used, when 30 years of age, to divert himself with drowning flies in oil, and blowing up living frogs with gunpowder. He had the misfortune to be deformed; his deportment and manners were undignified, and his mind was imbued with bigotry. When only about 15 years of age, he was married to the Princess Adelaide of Savoy, and spent his time wholly in amusements in the company of his spouse and of the ladies of the court. Nevertheless, in 1701, he was nominally appointed generalissimo of the army, really under the command of the Duke de Vendôme, and is said to have shown some spirit in a cavalry-fight at Nimeguen; but he quarrelled with Vendôme, chiefly because he had once been compelled to establish his headquarters in a nunnery. He lost the respect of the army, and was exposed to many humiliations, proceeding partly from intrigues set on foot against him out of envy by his father. He returned to the court more eccentric, gloomy, and unsociable than before. But when he became, on his father's death, the second person in the kingdom, all his defects vanished from the sight of the courtiers, and flattery bestowed on him the title of the Great Dauphin. A few days before his sudden death, his wife and her son, the Duke of Bretagne, had died, and the same hearse carried father, mother, and child to St. Denis. The Duke of Orleans, subsequently regent, and his daughter, the Duchess of Berri, were accused, but without reason, of having caused them to be poisoned.

BURGUNDY PITCH: resinous substance prepared from common frankincense (q.v.), the spontaneous exudation of the Norway spruce-fir (*Abies excelsa*: see FIR) by melting it in hot water, by which means it is freed from much of the volatile oil which it contains. By straining it through a coarse cloth impurities also are removed. B. P. is of a yellowish-white color, hard and brittle when cold, but softening by the heat of the hand, and readily adhering to the skin. It has a not unpleasant resinous odor, and a slightly bitter taste. It is used in medicine as an external application only, and generally acts as a mild irritant. A very common application of it is as a plaster in complaints of the chest, and in rheumatic complaints. It enters also as an ingredient with resin, oils, etc., into a compound plaster of similar use. The B. P. of commerce is now principally brought from Hamburg; but the greater part of what is sold under that name is really manufact-

BURGUNDY WINES—BURHAUNPUR.

ured of common rosin and palm-oil, or from American turpentine. It has a fuller yellow color than the genuine B. P., and a less agreeable odor.

BURGUNDY WINES: produce of vineyards chiefly on the hilly lands forming the Côte d'Or, between Dijon and Chalons. These hills average 800 to 1,000 ft. in height; the vineyards ascend the slopes in terraces, and spread along the table-land on the summit. 'In richness of flavor and in perfume, and all the more delicate qualities of the juice of the grape, the wines grown here unquestionably rank as the finest in the world.' The most celebrated of the *red* wines of Burgundy are the Closvogeot (near Beaune), Nuits, Chambertin (the favorite wine of Louis XIV. as well as of Napoleon), the Romané-Conti, Richebourg, Volnay, and Pomard. Of other red wines of Burgundy not grown on the Côte d'Or, those of Pitoy, Perrière, Preaux, and Auxerre, are held in most repute. The *white* wines of Burgundy also are the finest in France, but, being produced in less quantity, have less celebrity. The quantity of wine annually produced in Burgundy averages 3,500,000 hectolitres (77,000,000 gallons), of which only about a fifth is consumed in the district.

BURHAUNPUR, or BURHÁNPUR, *bôr-han-pôr'*: large town of India, territory of Gwalior, or possessions of Scindia's family; on the right bank of the Tapti, n. lat. 21° 18', e. long. 76° 20'; 280 m. n.e. from Bombay. The banks of the Tapti are here bold, rising 60 or 70 ft. above the stream. The town is surrounded by a rampart of brickwork, and contains a palace built by Akbar. A few of the wealthier merchants have good houses, built of teak, and profusely decorated with carvings. The most wealthy people are the Borahs, a Mohammedan tribe, who inhabit a distinct ward, which they shut up at night, excluding all other persons. There are manufactures of muslins, flowered silks, and brocades, for which the place was formerly famous, so that, in the 17th c., they were exported in great quantities to Persia, Egypt, Russia, and Poland.

BURIAL.

BURIAL, *n.* *bě'r'î-ăl* [see **BURY**: *AS.* *byrgels*, a sepulchre]: the act of burying; interment: **ADJ.** of or pertaining to interment, or a tombstone. Burial is a word of Teut. origin [*Ang.-Sax.* *birgan*, to conceal], applied to the prevalent method among civilized nations of disposing of the dead, by hiding them in the earth. Funeral customs are distinctive of the condition and character of a people, associating themselves with a wide variety of sentiments, from gentle and rational sorrow up to deification of the departed, accompanied sometimes with cruelty and ferocity toward the living. In disposal of the bodies of the dead, three methods have prevailed: 1. The simple closing up of the body in earth or stone; 2. The burning of the body, and the entombing of the cinders; and, 3. The embalming of the body. The first of these seems the earliest form on record, and most amply sanctioned by the existing practice of the civilized world. It is the method referred to in the earliest Scriptures (see the touching scene of Abraham's burial of Sarah, *Gen.* xxiii). The horrible fate of being left unburied, either from scorn or neglect, is powerfully told in the prophecy of Jeremiah against Jehoiakim: 'He shall be buried with the burial of an ass, drawn and cast forth beyond the gates of Jerusalem.'—*Jer.* xxii. 19. There is frequent allusion in the later Scriptures, and especially in the New Testament, to the embalming of the body in antiseptics and fragrant substances; and the burning of the bodies of Saul and his sons is accounted for by commentators on the supposition that they were too far decayed to be embalmed. The Israelites may have learned the practice of embalming from the Egyptians, among whom it was an art so greatly cultivated and extensively practiced that Egyptian corpses, as inoffensive as any article of wood or stone, are scattered over Europe in museums, and are even kept as curiosities in private houses. The soil and climate of Upper Egypt seems to have afforded facilities for embalming unmatched in any other part of the world; and in other places the vestiges of the practice are comparatively rare, though it is usual even yet to embalm royal corpses, and in some places to preserve a series of mummies, as in the vault of the monastery of Kreuzberg, at Bonn, where the monks have been successively preserved in their costume for centuries. The practice of incineration, or of the burning of the body, and the entombing of the ashes, deserves more inquiry than it has yet obtained. In Greece, in Etruria—both before and after it came under the Romans—and in the north of Europe, the simple burial of the body, and its prior reduction to ashes, were both practiced, sometimes contemporaneously. The tombs of Etruria are rich in art, much of it going to the adornment of the urns of baked clay in which the ashes of the dead are kept. Vessels of *terra-cotta*, or baked earth, containing human remains, have been found, often so large that they appear to have served as coffins for containing the whole body. Vessels of this kind were found in the valley of the Scamander by some British officers

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after the siege of Sebastopol, upon the ground supposed to have been occupied by the besiegers of Troy. Smaller cinerary urns have been found over so extensive a portion of the world, that it is difficult to define the limits to which they belong. The Danish antiquaries say, that in their stone period, when the use of metals was unknown, the dead were all buried unburned in stone chambers, and that the burning of the bodies and the preservation of the ashes in urns came in with the age of bronze. These antiquaries associate with the older system those amorphous mounds of earth or stone called barrows or tumuli, which are to be found all over the north of Europe. Mr. Bremner, in travelling among the steppes of the Ukraine, saw multitudes of these small mounds, which reminded him at once of what he had seen on the plain of Troy, at Upsala in Sweden, in Scotland, and in Ireland. The Irish tumulus of New Grange is perhaps the most remarkable of all, forming a connecting link between the simple barrow on the moor and the pyramids of Egypt, which are the perfection of the same kind of structure applied to the same purpose—the burial of the distinguished dead. These structures open up a large field of curious inquiry. The simple theory that the earth mounds were raised over the dead has lately been disturbed by the discovery that many of them are not artificial, but relics of sheets of alluvial matter, the mass of which has been carried away; and even in these human remains have been found, the natural mounds having been used as monuments. Even when human remains are connected with barrows, cromlechs, or the large shapeless pillars commonly called Druidical, it is often questionable whether the monument was made to receive such remains. It is certainly ascertained to have been a practice in ancient times to bury bodies in tombs which were themselves ancient when they received their inmates.

Some of the grandest buildings in the world have been tombs; such are the pyramids, the castle of St. Angelo, the tomb of Cæcilia Metella, and many temples scattered over Hindustan and other eastern countries. Thus, the respect paid by the living to the dead has preserved for the world many magnificent fruits of architectural genius and labor. A notion that the dead may require the things they have been fond of in life, has also preserved to the existing world many relics of the customs of past ages. The tombs of Egypt have supplied an immense quantity of them, which have taught the present age more of the manners of ancient nations than all the learned books that have been written. It is an awful evidence of barbarism and superstition, that inanimate things were not all that the dead were expected to take with them. Herodotus tells of favorite horses and slaves sacrificed at the holocaust of the dead chief. The same thing has been done in our own day in Ashantee. In many countries, the wives had the doom, or privilege, as it was thought, of departing with their husbands; and down to the present generation the practice has lived in full vigor in the Hindu suttī. Among the

BURIAL SOCIETIES—BURIDAN.

Jews, the Greeks, the Romans, and many ancient nations, the dead were buried beyond the towns. The 'stop, traveller!' was a usual memorandum on Roman tombs. In Christian countries, if the remains of the saint to whom a church was dedicated could be obtained—or anything passing for the remains—they were buried near the altar in the choir. It became a prevalent desire to be buried near these saints, and the bodies of men eminent for their piety, or high in rank, came thus to be buried in churches. The extension of the practice was the origin of churchyards. These, in crowded towns, became offensive and unhealthy. It can scarcely be said that this practice, so detrimental to the public health, as the burial within churches, was checked in Britain until the whole system of intramural interment, as it was called, was attacked, about 1844, by Mr. Chadwick and other sanitary reformers. Measures were afterward carried, beginning 1850, for shutting graveyards in crowded cities, and placing interments in open cemeteries under sanitary control.

In England, burial in some part of the parish churchyard is a common-law right, which may be enforced by mandamus—that is, every person may be buried in the parish where he dies. But the body of a parishioner cannot be interred in an iron coffin or vault, or even in any particular part of a churchyard, as, for instance, the family vault, without an additional fee. See FUNERAL: CEMETERY: CREMATION.

BURIAL SOCIETIES: friendly societies constituted in the usual manner, and with the express object of supplying a fund for paying the funeral expenses of the members on their death. See FRIENDLY SOCIETIES. It became customary to enter the names not only of adults but of children in such societies. The proceedings of the criminal courts in England have shown that, in a few instances, children on whose lives such an insurance was effected have been killed or allowed to die of neglect, and the alarm created by such instances, was enhanced by the discovery that children were frequently insured in more than one society. Against this calamitous use of a beneficial arrangement, stringent legal safeguards have been adopted.

BURIATS: tribe or race of Mongols (q.v.).

BURIDAN, *bŭr'î-dn*, Fr. *bŭ-re-dŏng'*, JEAN. b. at Bethune, Artois; 14th c.: scholastic metaphysician of the nominalist party. He studied at Paris under Occam, where he also became a teacher of philosophy. The events of his life, as well as the manner of his death are very obscure. One account states, that he was thrown into the Seine, by command of Marguerite de Bourgogne, daughter-in-law of Philippe le Bel, whose infidelities he had rebuked. Another, later, but less mythical account, states that B. was driven from France as a disciple of Occam, and fled to Austria, where he founded a school. His elucidations of Aristotle are among his most useful writings. In his *Logic*, his great endeavor was to facilitate the discovery of middle terms for all kinds of syllogisms. The celebrated sophism

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known to the schoolmen under the name of BURIDAN'S ASS, has been discussed at superfluous length, and with needless ingenuity, by Bayle. It is not at all likely that it was ever adduced by B., but more probably by his adversaries, who wished to ridicule his metaphysical doctrine of *Determinism*—viz., that in every mental and bodily action the will must be determined by something out of itself. The sophism referred to is, that if a hungry ass be placed exactly between two bundles of hay of equal size and attractiveness, it must starve, as there is nothing to determine the will of the animal toward either bundle. His chief works are—*Summula Dialectica* (Paris, 1481), *Compendium Logicæ* (Venice, 1489; Oxford, 1631), *In Aristotelis Metaphysica* (Paris, 1518).

BURIN, n. *bû'rîn*, sometimes called GRAVER [F. *burin*—from It. *borino*, a sharp chisel for cutting stone with: Fin. *purra*, to bite]: an engraver's tool made of tempered steel, of prismatic form, the graving end being ground off obliquely to a sharp point. The style of an engraver is sometimes described by such expressions as *soft B.*, *graphic B.*, *brilliant B.* BU'RINIST, n. an engraver.

BURITI PALM *bû-r'îti pâm* (*Mauritia vinifera*: see MAURITIA): a beautiful palm, abundant in the swamps of some parts of the n. of Brazil. It is one of the loftiest of palms. Its leaves are fanshaped, and form a large globular head at the top of the stem. It produces a great number of nuts about the size of a small hen's egg, covered with rhomboidal scales arranged in a spiral manner. Between these scales and the albuminous substance of the nut, there is an oily reddish pulp, which is boiled with sugar, and made into a sweet-meat. An emulsion also is prepared from it, which, sweetened with sugar, is a very palatable beverage, but if much used, is said to tinge the skin yellow. The juice of the stem also makes a very agreeable drink; but to obtain it, the tree must be cut down, when several holes about 6 inches square, 3 inches deep, and 6 feet apart, are cut in the trunk with a small ax; and these in a short time are filled with a reddish-colored liquid, having much the flavor of sweet wine.

BURK, v. *bêrk* [from *Burke*, the name of an Irishman who murdered by suffocation to provide subjects for dissectors—was hanged at Edinburgh 1829]: to murder by suffocation; to smother (see ANATOMY, in Law). BURK'ING, imp. BURKED, pp. *bêrkt*. TO BURK A QUESTION, to smother or suppress it by unfair means, before it has been fairly discussed.

BURKE, *bérk*, EDMUND. 1730–1797, July 7; b. Dublin: philosopher and politician, distinguished over all the men of his times for eloquence and political foresight. His father had extensive practice as an attorney. As a school-boy, he showed those traits of character and the germs of those powers which ultimately gave him greatness. In 1744, B. entered the Univ. of Dublin, of which he became a scholar. His undergraduate course was not extraordinarily distinguished; he appears to have had for favorite studies, poetry, oratory, history, and metaphysics. In 1784, Feb. he graduated B.A., and in 1751 took his degree as Master of Arts. In the interval (1750), being destined for the English bar, he proceeded to London, to keep his terms at the Middle Temple. To legal studies, however, he never took kindly, and ultimately he abandoned the idea of becoming a barrister. During 1750–56 he appears to have occupied himself in travelling through England, enjoying the society of literary men, in study, and finally in writing for various periodicals.

B., when yet at the university, had achieved a local reputation for literary talent and eloquence. Among the compositions of his undergraduate life, the most noticeable, perhaps, is his translation of the conclusion of the second Georgic of Virgil, which shows poetic talent. His first important publication, however, was the celebrated *Vindication of Natural Society* in imitation and ridicule of the style and reasoning of Lord Bolingbroke, in which, with well-concealed irony, he confutes his lordship's views of society by a *reductio ad absurdum*. This work, published anonymously 1756, attracted considerable attention. His age was then 26. In the same year, appeared his well-known essay, *A Philosophical Inquiry into the Origin of our Ideas of the Sublime and Beautiful*—a work containing a comprehensive induction of the various *sources* of the ideas referred to, but which fails, so far as it attempts to analyze into their primary elements the emotions of the sublime and beautiful.

The essay on the *Sublime and Beautiful* attained rapid popularity, and its author soon found himself courted by all the eminent men of his time. Garrick was already one of his friends; among them he soon could count Reynolds, Soame Jenyns, Lord Lyttelton, Warburton, Hume, and Dr. Johnson. Notwithstanding this popularity, however, his progress continued slow; for three years yet, he had to occupy himself with periodical writing, giving his leisure principally to political subjects. What is considered a joint work of B. and his cousin, William Bourke, appeared 1757—*An Account of the European Settlements in America*—and shows how carefully at this date he had studied the condition of the colonies. In 1761, Mr. W. G. Hamilton ('Single-speech Hamilton'), then sec. for Ireland, having appointed him his private sec., B. returned to Dublin, where, during two years' service, he demonstrated his aptitude for political business, receiving 1763, in reward of his services, a pension on the Irish establishment of £300, which, however, he did not long enjoy.

Returning to London, B., 1764, with Reynolds, founded the Literary Club, the history of which is associated with almost every considerable name in the literature of the period. But literary society did not withdraw his attention from the chances of a political career. He became private sec. to the Marquis of Rockingham on his becoming premier, and at the same time entered parliament as member for Wendover. Here his eloquence at once made him the reputation of being 'the first man in the Commons.' The Rockingham administration, however, lived only a few months, and with it terminated his second political employment. B.'s parliamentary life extended 1766 to '94 without intermission; he was successively member for Wendover, Bristol, and Malton; twice held the post of paymaster of the forces, once under Rockingham, and again under Lord North, with the standing of a privy councillor; after a career in parliament remarkable for the laboriousness, earnestness, and brilliancy with which every duty was discharged, and extending over nearly 30 years, he retired at last, receiving the thanks of the commons for his numerous public services, and rewarded by government, on the express request of his sovereign, with pensions amounting in all to £3,700. As paymaster of the forces he, with scrupulous regard to public economy, sacrificed all the perquisites of his office, exhibiting a severe integrity unusual at that period and not general at any time among public men; and in his relation with the constituency of Bristol, which was alienated from him by his advocacy of the claims of the Roman Catholics and of the opening of the trade of Ireland, he was the first to maintain the doctrine of the independence of parliamentary representatives—that they are not machines to vote for measures approved by their constituencies simply for that reason, but men and thinkers chosen by them to calmly consider and legislate for the good of the commonwealth. It must also be mentioned that during his career he rendered more important service to the cause of humanity than any man of his time; he prepared the way for the abolition of the slave-trade, a measure destined to ripen to success in the hands of Wilberforce; he advocated the cause of humanity in India against the voracious greed of stockholders, who regarded its millions simply as materials for plunder, and largely contributed to improve the government of that country. Toward America he advocated a policy of justice and conciliation, which, had it been adopted, would have averted the horrors of the war of independence and retained the colonies in amity with the mother country. And to the advocacy of every cause which he espoused he brought a capacity for patient research that was unlimited, and an eloquence that has never been surpassed.

As to his literary efforts in connection with his political labors—omitting a variety of valuable letters (several on the condition of Ireland) notice must be taken of his *Observations on a Pamphlet on the Present State of the Nation*, his first political pamphlet, published 1769, in answer to

one variously ascribed to Fox or Grenville. In 1770, he published a pamphlet, *On the Cause of the Present Discontents*. 1788, Feb. 13, he commenced his celebrated speech opening the trial of Warren Hastings (q.v.), the most remarkable trial, perhaps, in the history of the world. This speech lasted over four days, and has been characterized as 'a tempest of invective and eloquence.' No idea can be conveyed of the effect which it produced. The trial lasted seven years, and closed with another great and splendid oration from B., lasting over nine days. Hastings, it is well known, was acquitted. While this trial was advancing, B. found time to take part in all the current business. In 1790 appeared his *Reflections on the Revolution of France*, which sold in tens of thousands, and is said to have produced an effect never produced before nor since by any political essay. Hereafter, the world showered honors on B., of which space forbids even the enumeration. Having, in 1791, withdrawn from the whigs on the French question, he offered for the consideration of government, *Thoughts on French Affairs*, not published till after his death. *Heads for Consideration on the Present State of Affairs*, and *Reply to a Noble Lord*, next followed, the latter relative to himself personally. His last work, *Thoughts on a Regicide Peace*, showed that he retained to the end of his life his whole powers unimpaired.

Few men have been the subjects of higher panegyric than B., and, on the whole, few have better deserved praise. He was noble-minded, pure in his life, and a purist in politics. Intellectually, he was most richly endowed; with much imagination, rare powers of observation, and indefatigable industry, there was no subject which he could not master, and none which, having mastered, he could not expound with unparalleled richness of language. But with these virtues and powers were conjoined defects, which, without bating their greatness, largely neutralized their influence. He was, it may be said, too literary to be a philosopher, and too philosophic to be a politician. His career seems to illustrate this position. His oratory astounded by its brilliancy rather than persuaded by its tone and argument; and in the long-run, the eloquence which failed to command the reason, ceased to captivate the ear. The man who at first evoked the enthusiasm of the House by the brilliancy and power of his eloquence, did actually at last empty it by persistence in the monotonous splendors of his speeches. Passionate, and in a great degree untractable, he was unsuited for party politics, and drifted from all his connections, breaking up slowly all party ties, and even the ties of friendship, till he reached at last a state of almost political isolation. At the same time, it must not be forgotten how great an influence he, half philosopher, half politician, exercised on the counsels of the state; many of his views on politics and public economy were anticipations of science, as many of his previsions of the course of events were prophecies.

B. died in his 68th year. His Speeches were published

in 4 vols. (1816), his Works in 16 (1803-27), and his Correspondence in 4 (1844). See the Lives by Prior (4th ed. 1854), Macknight (1861), Morley (1867 and '79), and Robertson (Dublin, 1876).

BURKE, THOMAS NICHOLAS ('FATHER TOM'): Roman Catholic priest and lecturer: 1830, Sep. 8—1883, July 2; b. Galway, Ireland; son of a confectioner. While a lad he was sent to Rome, studied there for the priesthood, was ordained in England, and performed his first priestly duties for four years in the city of Gloucester. He was then sent to Dublin, and founded the novitiate and school of the Dominican Order at Tallaght, a neighboring village. Later, he returned to Rome, and for a time filled the pulpit of Cardinal Manning in the Church of Santa Maria del Popolo, developing remarkable power as an orator. In 1871 Father Burke came to the United States in the capacity of visitor-gen. of the houses of the Dominican Order. Here he became noted for his attack, in public lectures, on James Anthony Froude's work on *Ireland in the Eighteenth Century*. The latter years of his life were passed in Ireland. He died at the Tallaght convent.

BURL, v. *bêrl* [F. *bourlet*, a pad—from *bourre*, hair, flock: prov. F. *bouril*, a flock or end of thread which disfigures cloth: Sp. *borla*, a tuft]: to pick knots and loose threads from cloth when fulling it. **BURL'ER**, n. one who dresses cloth. **BURL'ING**, imp. **BURLED**, pp. *bêrld*. **BURL'ING-IRON**, n. an instrument like large tweezers used in clearing cloth of knots, ends of thread, and the like.

BURLEIGH, WILLIAM CECIL, Lord: see **CECIL**.

BURLESQUE, n. *bêr-lêsk'* [F. *burlesque*—from It. *burlesco*, comical, facetious—from It. *burlare*, to make a jest of: comp. Gael. *buirleadh*, the language of mockery or ridicule]: the turning any matter into ridicule; the representation of a subject in mock gravity with the view of exciting laughter: **ADJ.** tending to raise laughter; droll; comic: **V.** to turn a subject into ridicule; to treat a trifling matter with mock gravity to excite laughter. **BURLES'QUING**, imp. *-king*. **BURLESQUED'**, pp. *-lêskt'*. **BURLES'QUER**, n. *-lêsk'ër*, one who. **BURLESQUE'LY**, ad. **BURLETTA**, n. *-lêt'tă* [It.]: a comic opera or operetta; a musical farce.—**SYN.** of 'burlesque, n.': parody; satire; travesty; irony; sarcasm; caricature; comely; humor; wit.

BURLESQUE': a low and rude grade of the comic style, in speaking, acting, writing, and drawing. The legitimate comic brings together contrasts with a final view to harmonizing and reconciling them; the B. distorts and caricatures, and brings the incongruities into stronger relief. The farce is the B. of comedy. Deformities and monstrosities that excite disgust do not belong to the burlesque. The lofty and the abject, the great and the little, are conjoined, with the sole view of exciting a laugh. Nor does the true B. turn real greatness and nobility into laughter, but only sham greatness—false pathos, and all hollow pretension and affectation. The B. style appears to have been unknown to the ancients; it originated among



Burmah.—Buddhist Monks with their Pupils.

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the Italians, particularly with the poet Berni (q.v.). The genuinely national *buffone* of the Italians personates the burlesque. Carlo Gozzi, in his tragi-comedies, is perhaps the greatest in the B. vein. Scarron among the French, and *Hudibras* in English, are examples. Parody (q.v.) or Travesty (q.v.) is a species of burlesque. See FARCE.

BURLING, GILBERT: 1843-75: American painter, one of the founders of the Society of Painters in Water-colors. He painted almost exclusively in oil-colors at the commencement of his career, but abandoned these for the water-colors, as better adapted to his style. His later works were considered the best, among which the *Beach below Easthampton* and *Normandy Sketches* were the most notable.

BURLINGAME: *ber'ling-gam*: township of Osage co., Kan., 27 m. s.w. of Topeka, on the Topeka and Santa Fé railroad. It has several mills, and coal mining and the manufacture of pottery are among its industries. Pop. 1,673.

BURLINGAME, ANSON, LL.D.: 1820, Nov. 14—1870, Feb. 22; b. New Berlin, N. Y.: diplomatist. When a boy he lived on a farm with his parents in Rhode Island, Ohio, and Michigan. He entered the Univ. of Michigan, 1837, and in 1843 the Law School of Harvard Univ., graduating 1846. He began to practice law in Boston, became prominent in politics as a free soiler, and in 1852 was elected to the Massachusetts senate. In 1854 he joined the American party, by which he was elected to congress, and in the following year he was one of those who formed the republican party. In congress he was an able anti-slavery orator and debater, and became prominently known on account of his challenge by Preston S. Brooks for his comments on the assault by the latter on Senator Sumner. The challenge was accepted by Mr. Burlingame, and Navy Island, Canada, named as the place. Brooks objected, and the affair fell through. He continued to be re-elected to congress till 1861, when he failed of election, but was appointed, by President Lincoln, minister to Austria. Objection being raised by that country to the appointment, because of B's. having favored Hungarian independence, he was sent as minister to China. In 1867 he intended to resign his position, but had made himself so much respected by the Chinese government, that Prince Kung appointed him special envoy to the United States and the great western powers, to form treaties with those nations. This duty was accepted by Mr. B., and he arrived in the United States, 1868, Mar., accompanied by a numerous retinue of distinguished Chinese officials. Through his influence what is known as the Burlingame Treaty was effected between the United States and Chinese governments. Mr. B. prosecuted his diplomatic mission in England, France, Denmark, Sweden, Holland, and Prussia, negotiating important treaties with all those countries excepting France. Arriving at St. Petersburg, 1870, he was suddenly seized with a severe attack of pneumonia, which carried him away after an illness of a few days. Mr. B.

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was a man of fine culture, of wide understanding, of diplomacy, and statesmanship, and possessing a peculiarly courteous and agreeable manner which everywhere won him friends.

BURLINGTON: city, cap. of Des Moines co., Io., 98 m. s. by e. of Cedar Rapids, 207 m. w. by s. of Chicago; in a fine natural amphitheatre formed by limestone bluffs on the w. bank of the Mississippi river. These banks slope back from the river, upon the low ground, along which is built the business portion of the city; while upon the high bluffs above are the private residences, commanding extensive and beautiful views of the river scenery. The river at this point is broad, deep, and clear, and as the summits of the bluffs are planted with orchards and vineyards the scene is very attractive. After Dubuque and Davenport, B. is the largest city in Io. It is regularly laid out and well built, the houses chiefly of brick. It is a place of great commercial importance, and has extensive trade, both by way of the river and by the numerous railroads which reach it. In the neighborhood are extensive coal fields, which afford great facilities for manufacturing establishments, among which are flour mills, saw mills, foundries, pork packing houses, breweries, and soap factories. Four railroads converge at B., and it is connected with all the river ports by regular lines of steamers. The town was laid out in 1834, and between 1837 and 1840 was the cap. of Io. Its educational facilities are extensive, including the Burlington Business College, organized 1865, and the Burlington Univ. (Baptist), organized 1854. Besides the regular public school system there are special schools for Germans, including the First German Evangelical School, with 95 students, and the German Evangelical Zion School with 85 pupils. There is also the Gordon School with 32 pupils. There are about 15 churches, a public library, 3 national banks, 3 daily and 3 weekly papers. Many of the churches are handsome structures, and the Des Moines county court-house is a fine public building. Pop. (1870) 14,930; (1880) 19,450; (1890) 22,565; (1900) 23,201.

BUR'LINGTON: city and port of entry of Burlington co., N. J., on the Delaware river, about 15 m. s.w. of Trenton, by railroad, 20 m. n.e. of Philadelphia. The Amboy division of the Pennsylvania railroad gives B. direct communication with Philadelphia and New York. A branch r.r., 7 m. long, connects it with Mount Holly. It is laid out regularly and beautifully; and contains about a dozen churches, a national bank, Burlington College (founded 1846), a seminary for girls, called St. Mary's Hall. There are also manufactories of shoes. B. was settled 1667, and then called New Beverly. Pop. (1870) 5,817; (1880) 6,090; (1890) 7,264; (1900) 7,394.

BURLINGTON: port of entry, largest city of Vt., cap. of Chittenden co., on Burlington Bay, an arm of Lake Champlain. It was founded 1783, incorporated 1864. Its location is charming, being on elevated ground, 300 ft. above the lake, 1½ m. w. of the Winooski river, about 70

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m. n. of Whitehall, and 40 m. w.n.w. of Montpelier. Several branches of the Vt. Central railroad give it direct communication with all points n., e., and s. Steamboats connect it with all important points on the lake, and the sail affords picturesque views. The more elevated portion of the city also commands magnificent views of the Adirondack mountains beyond the lake, and of beautiful scenery in all directions. A fine court-house, the post-office, and a number of the principal hotels are built around a public square, near the centre of the city. The city contains many tasteful residences. It has an excellent harbor, improved by a break-water constructed by the U. S. government. The light-house stands on Juniper Island. The Univ. of Vermont, founded 1800, and open to both sexes, is located on a beautiful eminence nearly 300 ft. above the lake. B. is the seat of a Rom. Cath. bishopric, of a Prot. Epis. bishopric, and has the Vt. Episcopal Institute, a free library of 12,000 volumes, an orphan asylum, a hospital founded by Miss Mary Fletcher (erected at a cost of \$175,000), the custom-house, 1 daily and 2 weekly newspapers, 4 banks and 8 churches. It is one of the largest lumber markets in the country. There are large planing mills, machine-shops, and extensive manufactories of lumber, flour, cotton, furniture, carriages, steam fire-engines, doors and blinds, stoneware. Pop. (1900) 18,640.

BURLINGTON: township of Racine co., Wis., on the Western Union railroad, about 34 m. s.w. of Milwaukee, on the Fox river. It has two foundries, a woolen mill, and manufactories of wagons and agricultural implements; also a state and a national bank, five churches, and a high school. Pop. (1890) 2,043; (1900) 2,526.

BURLINGTON, England: see **BRIDLINGTON**.

BURLINGTON LIMESTONE: valuable building stone, abundant in the neighborhood of Burlington, Iowa, and in different localities along the Mississippi river. It is remarkable for the great mass of fossils contained in it, the crinoidea and corals being particularly abundant. It occurs generally in double layers, the upper consisting almost entirely of carbonate of lime, while the lower contains magnesia.

BURL'TON, PETER HENRY: 1804-29: English explorer, who was killed in India, while making scientific researches there.

BURLY, a. *bér'lı* [Ir. *borram*, to grow big and prosperous: Gael. *borr*, swelling, strong; *borrail*, swaggering, haughty: Scot. *buirdly*, stout and strong]: big and fresh-looking; big and honest but not refined; stout and jolly; big and blustering. **BUR'LINESS**, n. *-lı-nēs*, the being big, fresh, and honest-looking; the being big and blustering. **HURLY-BURLY**, n. confusion; uproar.

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BURMAH, *bér'mâ*, EMPIRE OF; called also the EMPIRE OF AVA: till 1885 an independent kingdom of the Indo-Chinese peninsula. Formerly it was of great extent; but by two contests with the British power in India, it lost several provinces, until, in its widest sense and including tributary states, it was comprehended between $19^{\circ} 29'$ and 28° n. lat., and 93° and 100° e. long.; about 175,500 sq. m. Pop. estimated 4,000,000. It was bounded on the n. by mountains, separating it from Assam and Tibet; on the e., by China; on the s. by the British province of Pegu; and on the w., by Munnipore and mountain-ranges dividing it from Tipperah, Chittagong, and Aracan. The Burman empire, thus defined, had three well-marked divisions: 1. Northern B., inhabited chiefly by Singphos, Shans, and other tribes; 2. B. proper; 3. The Eastern Shan tributary states. The area of B. proper, from lat. 24° n. to the frontier of Pegu, is 44,450 sq. m. Pop. about 1,200,000.

Physical features.—From the e. extremity of the great transverse mountain-barrier of n. India, longitudinal ranges strike away southward, and between two of these are the Burman territories. The country slopes from the high-land regions of the n. toward the coast, and is fitly described as 'a varied surface of rolling upland, interspersed with alluvial basins and sudden ridges of hill.'

The principal river, the Irrawaddy (q.v.), having its source amid the snowy mountains from which descends the Brahmaputra, is the great commercial highway of the country, through the heart of which it takes its course. Passing Amarapura, Ava, and other towns, it enters Pegu, and, 90 m. below Prome, divides into an e. and w. branch, the former flowing past Rangoon, the latter forming the Bassein river. The Kyen-dwen is its principal tributary. To the e. of the Irrawaddy, the Salween, after an almost parallel course, enters the British territories in nearly the same latitude.

Climate.—On the coast, only two seasons are known—the dry and the rainy, which are regulated by the n.e. and the s.w. monsoons; but in B. proper, less rain falls, and there are three seasons—the cold, the hot, and the rainy. Some showers fall in May or June, but the great rains last from the middle of Aug. to the end of Oct. The cool season is from the middle of Oct. till the beginning of April, and from this month till the great rains is the hot part of the year, the thermometer ranging 85° to 100° . The climate is, on the whole, healthful, but the jungles are very pestiferous.

Minerals.—B. has vast fields of mineral wealth; but little enterprise and capital are brought to bear upon them. There are gold mines at Bamo, near the Chinese frontier. Auriferous sand is found in many streams. Silver is obtained at Bau-dwen, likewise on the confines of China, also in the Shan country, whence comes the chief supply of lead. Iron is quarried at Poukpa, a lofty mountain a few miles e. of Pagan. The celebrated ruby mines of B. are 60 or 70 m. n.e. from the capital, and are jealously guarded. Sapphires of great size are found in the same stratum, but

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are more rare. The annual value of the gems is estimated at from \$60,000 to \$75,000, and they are the property of the king. Wells of petroleum are worked at Ye-nangyoung, on the Irrawaddy, above Prome. Marble, noble serpentine, and amber are in large quantities.

Vegetable productions.—A few only of the most striking of these can be noticed. Of the graceful palm-tribe (*Pal-maceæ*), the coccao-nut, the betel, the palmyra, and the nipa, or water-palm, are most prized. The useful bamboo is widely diffused. The teak, of which B. has inexhaustible forests, and the hopœa, are among the most valuable timber-trees. Forests of pine grow e. of Amarapura. The wood-oil tree is found on the higher Salween, one trunk of which will produce from 30 to 40 gallons of oil every season. The staple fruit of the country is the plantain or banana. The jack is prized by the natives. The mango reaches the height of 100 ft., and produces delicious fruit. Rice, wheat, tobacco, indigo, and cotton are cultivated.

Animals.—The *Felidæ*, or cat family, abound, tigers, leopards, and tiger-cats being met with in every part of the country. Of the *Pachydermata*, the elephant and rhinoceros are most noteworthy. The elephant, buffalo, and Indian ox have been domesticated.

Ethnology.—The Burmans belong to that branch of the Mongolidæ characterized by a monosyllabic language; they are short-headed, broad-skulled, and flat-faced. The hair is black, and the skin of a deep-brown color. Their *dress* is simple, but peculiar. The *in-gie*, a white linen jacket, is common to both sexes. Wrapped round the lower part of the body, the men wear the *put-so*, which is several yards in length; the women, the *te-mine*, a scant garment of cotton or silk. Silks, muslins, and valuable gold ornaments are worn on especial occasions. Betel-nut chewing and cigar-smoking are greatly practiced by both men and women. The Burmans are, generally speaking, fine, well-made men, and excel in wrestling, boxing, rowing, football, and other athletic exercises; they are clever as carpenters and smiths. Burman houses are made of a framework of bamboo, thatched with the leaf of the water-palm, and are invariably raised on posts several ft. from the ground. The women are more industrious than the men; they buy, sell, weave, and attend to the domestic concerns. Both sexes delight in merry-making, feasting, buffoonery, and sight-seeing. A *pooay*, or theatrical representation, is a favorite amusement, and a buffalo-fight attracts crowds of spectators. The Burman has little patriotism, but is attached to his home. Without individual cruelty, he is indifferent to the shedding of blood by his rulers. Though temperate and hardy, he dislikes discipline and continued employment; and when in power, is often arrogant, arbitrary, and corrupt.

Besides the true Burman, a great variety of races inhabit the Burman territories. The *Telaings*, or *Moans*, descendants of the ancient Peguans, are amalgamated with the Burmans. The *Shans*, or *Tai*, perhaps the most numerous and widely diffused of the Indo-Chinese peoples, are scat-

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tered over the peninsula, from Munnipore to Bangkok. Of the eastern Shan states some are tributary to B., others to Siam, while those w. of the Irrawaddy are wholly under Burman rule. The *Singphos* cluster round the mountains of the n., and along the w. mountain boundary of Burmah wild *Kyhens*, and many tribes under different names, live in varying low degrees of civilization. The *Karens* are chiefly in southern Burmah.

Religion.—Buddhism is the prevailing religion of B. and has here been preserved in its original type. Its monuments—temples, shrines, and monasteries—are innumerable; its festivals are carefully observed, and its monastic system is fully established in every part of the kingdom. For the doctrines and history of this system, see BUDDHISM.

The members of the monastic fraternity are known in B. as *pon-gyees*, meaning ‘great glory;’ but the Pali word is *rahan*, or holy man. The *pon-gyees* are not priests, but rather monks. Their religious ministrations are confined to sermons, and they do not interfere with the worship of the people. They are a very numerous class, living in monasteries, or *kyoungs*, and may at once be known by their yellow robes (the color of mourning), shaven heads, and bare feet. They subsist wholly by the charity of the people, which, however, they well repay by instructing the boys of the country. The *kyoungs* are thus converted into national schools. The vows of a *pon-gyee* include celibacy, poverty, and the renunciation of the world; but from these he may at any time be released, and return to a secular life. Hence, nearly every youth assumes the yellow robe for a time, as a meritorious act, or for the purpose of study, and the ceremony of making a *pon-gyee* is one of great importance. The ostensible object of the brotherhood is the more perfect observance of the laws of Buddha. The order is composed of five classes—viz., young men who wear the yellow robe and live in the *kyoungs*, but are not professed members; those on whom the title and character of *pon-gyees* have been solemnly conferred with the usual ceremonies; the heads or governors of the several communities; provincials, whose jurisdiction extends over their respective provinces; and lastly, a superior general, or great master, who directs the affairs of the order throughout the empire.

No provision is made for religion by the government, but it has liberal support from the people. A *pon-gyee* is held in profound veneration; his person is sacred, and he is addressed by the lordly title of *pra* or *phra*; nor does this reverence terminate with his death. On the decease of a distinguished member, his body is embalmed, while the limbs are swathed in linen, varnished, and even gilded. The mummy is then placed on a highly decorated cenotaph, and preserved, sometimes for months, until the grand day of funeral. The Burman rites of cremation are very remarkable. On the whole, an opinion in a certain sense favorable may be passed on the monastic fraternity of B.; though abuses have crept in. discipline is more lax than

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formerly, and many doubtless assume the yellow robe from base motives.

In B., the last Buddha is worshipped under the name of Gautama. His images crowd the temples, and many are gigantic. The days of worship are at the new and full moon, and seven days after each; but the whole time, from the full moon of July to the full moon of October, is devoted by the Burmans to a stricter observance of the ceremonies of their religion. During the latter month, several religious festivals take place, which are so many social gatherings and occasions for grand displays of dress, dancing, music, and feasting. At such times, barges full of gaily-dressed people, the women dancing to the monotonous dissonance of a Burman band, may be seen gliding along the rivers to some shrine of peculiar sanctity. The worship on these occasions has been described by an eye-witness, 1857, as follows: 'Arrived at the shrines and temples the people suddenly turn from pleasure to devotion. Men bearing ornamental paper-umbrellas, fruits, flowers, and other offerings, crowd the image-houses, present their gifts to the favorite idol, make their *shek-ho*, and say their prayers with all dispatch. Others are gluing more gold-leaf on the face of the image, or saluting him with crackers, the explosion of which in nowise interferes with the serenity of the worshippers. The women for the most part remain outside, kneeling on the sward, just at the entrance of the temple, where a view can be obtained of the image within.' On another occasion, we read: 'The principal temple being under repair, was much crowded by bamboo scaffolding, and new pillars were being put up, each bearing an inscription with the name of the donor. . . . The umbrellas brought as offerings were so numerous, that one could with difficulty thread a passage through them. Some were pure white, others white and gold, while many boasted all the colors of the rainbow. They were made of paper, beautifully cut into various patterns. There were numerous altars and images, and numberless little Gautamas; but a deep niche or cave, at the far end of which was a fat idol, with a yellow cloth wrapped round him, seemed a place of peculiar sanctity. This recess would have been quite dark, had it not been for the numberless tapers of yellow wax that were burning before the image. The closeness of the place, the smoke from the candles, and the fumes from the quantity of crackers constantly being let off, rendered respiration almost impossible. An old pon-gyee, however, the only one I ever saw in a temple, seemed quite in his element, his shaven bristly head and coarse features looking ugly enough to serve for some favorite idol, and he seemed a fitting embodiment of so senseless and degrading a worship. Offerings of flowers, paper ornaments, flags, and candles were scattered about in profusion. The beating a bell with a deer's horn, the explosion of crackers, and the rapid muttering of prayers, made up a din of sounds, the suitable accompaniment of so misdirected a devotion.'

The rosary is in general use, and the Pali words *Aneit*

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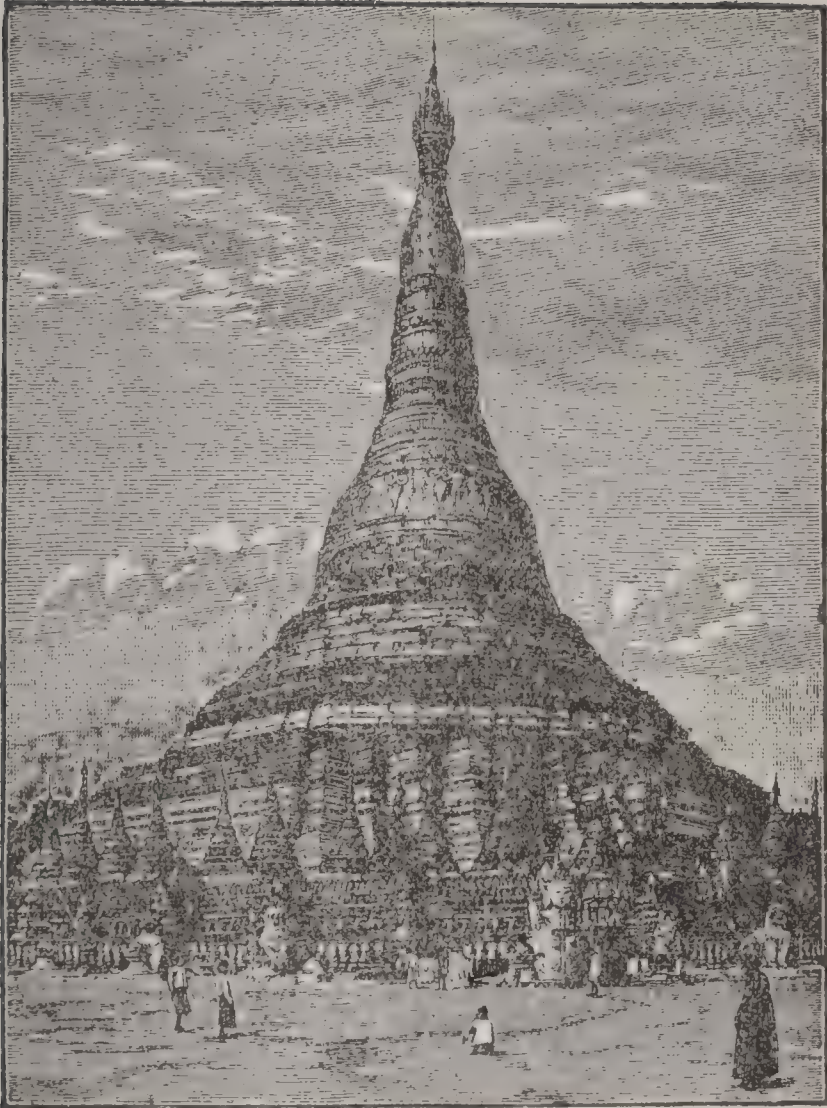
ya! doka! anatta! expressing the transitory nature of all sublunary things, are often repeated. The Burman is singularly free from fanaticism in the exercise of his religion, and his most sacred temples may be freely entered by the stranger without offense; indeed, the impartial observer will hardly fail to admit that Buddhism, in the absence of a purer creed, exerts some influence for good in the country under consideration, teaching man to combat and master his passions, and to exalt mind over matter.

The sacred edifices are of three kinds: The *tope*, *dagoba*, or *shrine* (*Zudee* or *Tsa-dee*), a monument to the last Buddha, is a solid, bell-shaped mass of plastered brickwork, tapering to the summit, which is crowned by the *tee*, or umbrella, of open ironwork. 2. The *temple*, in which are many images of Gautama. The most remarkable specimen of Burman temple architecture is the *Ananda* of Pagan. The ground plan has the form of a perfect Greek cross; and a tapering spire, with a gilded tee at the height of 168 ft. from the foundation, crowns the whole. 3. The *kyoung* or monastery (*vihara*) is generally constructed with a roof of several diminishing stages, and is often elaborately adorned. Burman architecture 'differs essentially from that of India in the frequent use of the pointed arch; not only for doors and windows, but also in the vaulted coverings of passages.'

Christian missions have been carried on with great devotedness in B., and begin of late years to show gratifying results.

Cities.—Rangoon is the headquarters of the chief commissioner: pop. (1901) 234,881. Mandalay, former cap. of Upper B., is laid out in three parallelograms, one within another, of which the inner two are walled; the palace occupies the centre; pop. (1901) 183,816. Ava and Amarapura, each at one time the cap. of the empire, are now almost deserted. Pagan represents the past of B., and is remarkable for its magnificent ruins of temple architecture, extending over 8 sq. m.; the prevailing type is the cruciform vaulted temple.

Government.—The government of B. was a pure despotism, life and property being at the mercy of the reigning sovereign. Many instances of the cruel abuse of arbitrary power might be given. Thus the late king, Thebaw, inaugurated his accession, 1878, by the murder of a hundred relatives and other possible rivals. The *Lot-dau* or High Court of Council, was composed of the four *woon-gyees*, or principal ministers of state. The *atwen-woons*, or household ministers, were likewise four in number. They received the royal commands, and were in close attendance upon the king. The *woon-douks* were a third order of ministers, and acted as assistants to the *woon-gyees*. The decisions of the *lot-dau*, when sanctioned by the king, became law. The *Dam-a-that*, a Burman translation of the *Institutes of Menu*, was also in force. White umbrellas and white elephants were regarded as insignia of royalty. The 'Lord White Elephant,' indeed, was looked on as an



Burmah.—Shway Dagon Pagoda at Rangoon.

estate of the realm, a mark of universal sovereignty, and a sacred being. It had a palace, a minister, and numerous attendants.—The *military power* of the country was not great, its army of 30,000 men being mainly an undrilled rabble, armed with old rusty muzzle-loaders.

The *civilization* of B., if not retrograde—which the ruins of Pagan suggest—is stationary and stereotyped, like that of China. All the wealth of the country is lavished on the sacred edifices, \$50,000 being sometimes expended the gilding and beautifying of a single shrine or temple, while roads, bridges, and works of public utility are neglected.

The *vernacular tongue* of B. belongs to the monosyllabic class of languages and is without inflection; the character is formed of circles and segments of circles. It is engraved on prepared strips of palm-leaf, and a number of these form a book. Printing is unknown except where intro-

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ထော်ထိုင်း၊ ဝိညာဉ်မသောနိုင်ကြောင်းကို နှစ်သုံးသွင်း
 ကြဝါလော့။ သင်တို့ ကိုယ် ခန္ဓာသေသော နောက်၊
 ဝိညာဉ်သည် ချမ်းသာစွာနေရအောင် အသက်သို့ပြုရ
 မည်ကို၊ ဆရာမိဘကံတောင်းပန်မေးမြန်းရကြမည်။
 ငါသည်ထည်းသင်တို့ဝိညာဉ်အကြောင်းကို၊ အခြား
 သာစာငယ် နှင့်ငြောကောင်းငြောထေဦးမည်ထု၊ သင်
 တို့၏မိတ်ဆွေ ဖြစ်သော၊ အမေရိကံဆရာ၊ ဂဝောဒကံ
 ငြော၍၊ နှုတ်ဆက်ပေ၏။

Specimen of Burmese Writing.

duced by the missionaries. *Pali* is the language of the religious literature.

Commerce.—Since B. was deprived of its harbors and maritime districts, its foreign commerce has been very limited. The principal exports (from B. proper) consist of Sesamum oil, teak-timber, petroleum, sweet-oil, tobacco, lacquered boxes, gold-leaf, silver, lead, copper, stick-lac, indigo, cocoa-nuts, ponies, wheat, pulse, and cotton. The imports (into the Burman empire) are *ngapee* (a paste of rank pickled fish, eaten with rice, the staple food of the Burman), paddy, rice, dried fish, salt—all these being imported by thousands of tons annually—cotton piece-goods, silk piece-goods, and woollens. B. has overland traffic with China, exporting cotton and importing silk.

History.—Of the early and mythical history of B., nothing need here be said. The kingdoms of Ava and Pegu long contended for mastery. The latter was in its zenith about A.D. 1580. In 1752, the Peguans, after a period of subjection, had obtained the advantage; but

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Alompra, or *Aloung Pra*, the most celebrated warrior-king in Burman history, rose to power, subdued the Peguans, and incorporated their country, as well as many neighboring states, with his own. The Burman empire was greatly curtailed by the wars of 1822-24 and 1852 with the British. The half-drunken, half-crazy excesses of young King Thebaw led 1879, to the withdrawal of the British resident; and in 1885, his attacks on the interests of British subjects in B. called forth an ultimatum from Lord Dufferin, the Indian viceroy. On Thebaw's refusal to treat, an expedition under General Prendergast advanced up the Irrawaddy, and meeting with slight opposition, occupied Mandalay, 1885, Nov. 28. Thebaw's deposition and removal to India were followed, 1886, Jan. 4, by the British annexation of B. See Yule's *Narrative of the Mission in 1855*; Fytche's *B., Past and Present* (1878); *The Burman: his Life and Notions*, by Shway Yoe (1882); Vincenti's *Land of the White Elephant* (1874); Phayre's *History of B.* (1883).

Pop. (1901) Upper B., 3,849,833; Lower B., 5,389,897.

BURMAH, BRITISH: maritime province of India beyond the Ganges. The three divisions of Aracan, Pegu, and Tenasserim, united in one administration in 1862, are now four, Pegu having been subdivided and a new division, Irrawadi, created. British Burmah extends along the Bay of Bengal from 20° 50' n. lat. to 10° 15', with a coast-line of about 900 m. area, 87,220 sq. m. The whole of this territory was taken from the king of Burmah in the two wars provoked by him. For areas and populations of the several divisions, see **TENASSERIM**; which see, as also **PEGU** and **ARACAN**, for the climate and productions of British Burmah. Akyab (q.v.), Rangoon (q.v.), and Moulmein are the principal ports of Aracan, Pegu, and Tenasserim respectively. The Burmans (including Aracanese and Taleins or Peguans), number about two millions. Other races are Karens, Shans, Chinese, and Hindus. Pop. of British Burmah (1871) 2,747,178; (1881) 3,736,771; (1891) 7,605,560; (1901) 10,490,624.

BURMAN, a. *bér'măn*, or **BURMESE**, a. *bér-měz'*: belonging to Burmah, a country of s.e. Asia. **BURMESE'**, n. *-mēz'*, a native of Burmah.

BURMANN, *búr'mân*, **PETER**: 1668-1741, Mar. 31; b. Utrecht: most important member of a Dutch family celebrated for learning. He studied law at the univ. of that city and of Leyden, and, after taking his degree 1688, travelled through Germany and Switzerland. After practicing as an advocate for some years, he was appointed prof. of history and rhetoric in the Univ. of Utrecht; which office he exchanged for the professorship of Greek. In 1715, after the death of Perizonius, he removed to the Univ. of Leyden, where he died.

His literary career was very active, and his hot temper and intolerant spirit involved him in many controversies. Among his most distinguished adversaries were Le Clerc and Bentley. His chief works are editions of the Latin classics—Petronius, Velleius, Paternulus, Quintilian, Va-

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lerius Flaccus, Phædrus, Ovid, the Poëtæ Minores, Suetonius, Lucan. The first of these appeared 1709, and the last 1740. They are characterized less by taste and critical acumen than by learning, fulness of matter, and beauty of type.

BURN, *n.* *bern* [AS *byrnan*, to burn: Goth. *brinnan*: Dut. *branden*: Ger. *brennen*: Icel. *brenna*]: an injury to the flesh by the action of fire: **V.** to injure by fire; to reduce to ashes by the action of fire; to harden by fire; to scorch, as the clothes; to be on fire; to shine; to rage with violence or passion; to feel excess of heat in the body. **BURN'ING**, *imp.*: **ADJ.** very hot; scorching; powerful: **N.** the act of reducing to ashes; a fire; the vehemence or raging of passion. **BURNED**, or **BURNT**, *pt.* and *pp.* *bernd*, *bernt*. **BURN'ER**, *n.* the small movable part of a lamp or gas lustre, etc., next the flame. **BURNING-BUSH**, the bush of Ex. iii. 2-4; the Artillery plant, *Pilea serphyllifolia*; *Euonymus atropurpureus*, and *E. Americanus*. **BURNING-GLASS**, *n.* a convex lens of glass for collecting the rays of the sun so as to produce heat (see **HEAT: LENS: MIRROR**). **BURNING-MIRROR**, *n.* a concave surface, usually of polished metal, for the same purpose. **TO BURN ONE'S FINGERS**, to get into trouble by injudicious interference in the affairs of others, or by entering rashly into speculations, and the like. **TO BURN OUT**, to obliterate by burning; to cease burning when the fuel is exhausted. **TO BURN UP**, to consume entirely.—**SYN.** of 'burning, *n.*': fire; flame; combustion; conflagration; blaze; inflammation; — of 'burning, *a.*': ardent; fiery; hot; scorching.

BURN, *n.* *bern* [Goth. *brunna*; Icel. *brunnr*; Ger. *born*, a well, a spring: Gael. *burn*, water]: in *Scot.*, a brook; a small running stream.

BURN, RICHARD: 1720-85; b. at the village of Winton, Westmoreland, England. After being educated at Queen's College, Oxford, he received the living of Orton, in his native county, which he continued to hold till his death. He is known as the compiler of two very useful law-books, the *Justice of the Peace* and *Ecclesiastical Law*, which have each passed through many editions. He also published a *History of the Poor-laws*, and edition of Blackstone's *Commentaries*, and several sermons and works of a religious nature.

BURNABY, FREDERICK GUSTAVUS: 1842-85: British officer, lieut.col. of the Royal Horse Guards Blue in 1881; noted for his extraordinary and daring travels through S. America, central Africa, and other countries, and especially for his wonderful 'Ride to Khiva,' 1875, of which he wrote an exciting narrative. In 1876 he travelled through Asia Minor and Persia, and was in the army of Don Carlos in Spain as correspondent of the *London Times*. Later he was in the expedition to the Eastern Soudan and was severely wounded in the battle of El Tib. He was also with the Nile expedition force 1884 under Sir Herbert Stewart, and in the first battle, that of Abu Klea, was killed by an Arab spear. B. was noted also as an intrepid arëonaut. In 1882 he crossed the English Channel in the balloon 'Eclipse,' landing in Normandy. He wrote besides *A*

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Ride to Khiva, On Horse-Back through Asia Minor (1877), and *A Ride across the Channel* (1882).

BURNES, *bernz*, Sir ALEXANDER: 1805–1841, Nov., b. Montrose, Scotland, where his father, cousin of Robert Burns the poet, was magistrate. Sir A. was a distinguished traveller in central Asia. He early entered the Indian army, and his knowledge of oriental languages gained him rapid promotion. After performing some important missions for the Indian government, he was, at his own suggestion, sent on an expedition into central Asia. Starting from Lahore 1832, Feb. 11, B., having adopted the dress and usage of the Afghans for greater safety, passed through Peshawur and Cabul, and crossing the Indian Caucasus, reached Balkh June 9. Thence he passed to Bokhara, Astrabad, and Teheran, and journeying through Ispahan and Shiraz, reached Bushire on the Persian Gulf, whence he embarked for India. In 1839, Sep., having been knighted and promoted to the rank of lieut.col., he was appointed political resident at Cabul, where he was murdered on the breaking out of the insurrection 1841, Nov.—a tragedy reenacted 1879, when Sir Louis Cavagnari, newly appointed resident in Cabul, was massacred with his staff and guards. B. was author of *Travels into Bokhara* and a work on *Cabul*.

BURNET, *n. ber'nèt* [from *burn*, referring to the acrid and pungent taste of the root]: name of two genera of plants, *Sanguisorba* and *Poterium*, belonging to the nat. ord.



Great Burnet (*Sanguisorba officinalis*):

a, a leaf; *b*, spikes of flowers; *c*, a flower.

Sanguisorbeæ (q. v.) — generally regarded as a sub-order of *Rosaceæ* — which have much resemblance to one another, and receive a common name also in other languages. *Sanguisorba* has hermaphrodite flowers with four stamens; in *Poterium*, the flowers are polygamous, and the stamens indefinite in number. In both, the calyx is 4-fid, and the corolla wanting.—**GREAT B.** (*Sanguisorba officinalis*) is common in meadows in all parts of Europe, particularly where the soil is calcareous. It has a stem 1–2 ft. high, pinnate leaves, with about four pair of ovate serrated leaflets and an odd one; the flowers are crowded in dark red spikes. It is cultivated in Germany for feeding cattle, and is much esteemed for this use, as it grows well even on very poor soils, and the produce is abundant. Cattle are very fond of it. The root is astringent, and was formerly used in medicine.—

COMMON B. (*Poterium Sanguisorba*) grows in sunny places on hills in the middle and south

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of Europe. In habit and foliage it much resembles the Great B., but the leaflets are smaller and the flowers are in heads of a dull purplish color. It has been much cultivated in some parts of England as a substitute for clover on chalky soils, and is relished by cattle. It forms great part of the natural pasture of the South Downs, and of the excellent sheep-walks of Salisbury Plain. It is regarded as a plant particularly suitable for poor, arid soils. It is sometimes



Common Burnet (*Poterium Sanguisorba*).

cultivated in gardens, and its leaves, slightly astringent, are used in salads or soups. They are said to form one of the ingredients of the famous *cool tankard*, and the name *Poterium* is from a Greek word signifying a drinking vessel.—Both this and the preceding are perennial plants.—There are several other species both of *Sanguisorba* and *Poterium*, some of the latter shrubby, natives chiefly of the warmer temperate parts of the world.

BUR'NET, GILBERT, Bishop of Salisbury, England: 1643, Sep. 18—1715, Mar. 17; b. Edinburgh. He was educated at home, and afterward at Marischal College, Aberdeen, where he took his degree of M.A. before he was fourteen years of age. In less than three years he mastered the chief systems of divinity, besides having gone over the Old and New Testaments in the original, with all the Commentaries of note in his time. In 1663, he visited Cambridge, Oxford, and London, where he met many of the leading divines of England. Next year, he went to Holland, and perfected his knowledge of Hebrew under a learned rabbi of Amsterdam. In 1665, he was presented to the parish of Saltoun, where he remained five years. In 1669, he was appointed prof. of divinity in the Univ. of Glasgow, but being involved in the politico-ecclesiastical affairs of the time, he brought upon himself the

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enmity of Lauderdale, and found it prudent to resign his chair 1674. He now removed to London, and was made preacher at the Rolls' Chapel by Sir Harbottle Grimston, and afterward lecturer at St. Clement's. In 1676, he published his *Memoirs of the Dukes of Hamilton*, and in 1679, the first vol. of his *History of the Reformation*, which procured him a vote of thanks from both houses of parliament. Next year appeared *Some Passages in the Life and Death of the Earl of Rochester*, in which B. records the religious interviews which he had with that profligate nobleman during his last illness, and which led to the latter's conviction of the truth of Christianity. In 1681, he published the second vol. of his *History of the Reformation*, and in 1682, his *Life of Sir Matthew Hale*. Efforts previously made were renewed, to induce him to break with the liberal and moderate party, and to attach himself to the king. He was offered the bishopric of Chichester, but refused it. In 1683, he narrowly escaped being brought into trouble in regard to the Ryehouse plot. He conducted the defense, attended the execution, and vindicated the memory of his friend Lord William Russell. The king exhibited his unkindly spite by depriving B. of his St. Clement's lectureship. On the accession of James II., he went to the continent and travelled through France, Italy, Switzerland, and Germany. In 1684, he was introduced to the Prince of Orange, with whom he became a great favorite, and by whom he was frequently consulted in reference to the great scheme for the deliverance of England. When William came over, B. accompanied him in the capacity of royal chaplain, and shortly afterward was appointed bishop of Salisbury. He entered on the duties of his diocese with great ardor; but his first pastoral letter, in which he founded the right of William to the throne on conquest, gave so much offense to both houses of parliament, that they ordered it to be burned by the hands of the common hangman. William, however, who knew the excellent qualities of the bishop, was not greatly impressed by this solemn performance, and continued to trust B. to the end of his life. In 1698, B. was appointed preceptor to the Duke of Gloucester; in 1699, he published his celebrated exposition of the 39 Articles, which was condemned as heterodox by that not very competent theological authority, the house of lords. In 1714, appeared the third vol. of his *History of the Reformation*. In the spring of the next year, he died of pleuritic fever. B. was thrice married: his first wife was remarkable for her beauty; the second, for her wealth; and the third, for her piety.

Soon after B.'s death, appeared *Bishop B.'s History of his Own Time, from the Restoration of King Charles II. to the Conclusion of the Treaty of Peace at Utrecht, in the Reign of Queen Ann*. It was sarcastically but foolishly abused by the tory writers of the day—Swift, Pope, Arbuthnot, and others. B. was a man of strict, almost puritanic virtue; yet he was a model of charity, geniality, and moderation of sentiment. His style is neither elegant nor correct, and

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his judgment is not always reliable, yet the honesty, earnestness, simplicity, and vigor of his writings, as well as their fulness of details, make his works very valuable to the student of history.

BURNET, JACOB, LL.D.: jurist: 1770-1853; b. Newark, N. J.: son of Dr. William B.: graduated at Princeton 1791. He was admitted to the bar 1796, and removed to the new settlement at Cincinnati the same year, where he became a successful lawyer and a prominent citizen. He served successively in the legislature 1812, as judge of the supreme court 1821-28, and as U. S. senator 1828-31. He published *Notes on the Early Settlement of the Northwestern Territory*.

BURNET, JOHN: 1784, Mar.—1868; b. Fisherrow, near Edinburgh: painter, engraver, and author. He was first brought under the notice of the public through his admirable engravings of Wilkie's works. Of his own paintings, the best known engraving is that of *Greenwich Pensioners receiving News of the Battle of Trafalgar*. He wrote several works on art, illustrated by drawings and engravings of his own, the most important of which is a *Practical Treatise on Painting*. He was author of *Rembrandt and his Works*, 4to, 1849; and in conjunction with Mr. Peter Cunningham, of *Life and Works of J. M. W. Turner*, 1852.

BURNET, THOMAS: 1635-1715: b. Yorkshire, England: known from his *Theory of the Earth*. He studied at Cambridge. After acting as travelling tutor to several noblemen, he was elected master of the Charter-house (1685), and later, succeeded Abp. Tillotson as clerk of the closet to William III. But having (1692) published a work *Archæologiæ Philosophicæ, sive Doctrina Antiqua de Rerum Originibus* (also in English), showing great learning, but treating the Mosaic account of the Fall as an allegory, he was obliged to retire from the clerkship, and lived in the Charter-house to his death. His *Telluris Theoria Sacra* (first part, 1680; second, 1689) was written in Latin, but translated, or rather recomposed in English, by the author, and received great applause. It is an ingenious speculation, written in ignorance of the facts of the earth's structure, and therefore a mere system of *cosmogony*, and not geology. But it abounds in sublime and poetical conceptions and descriptions, in language of extraordinary eloquence.

BURNETT, FRANCES (HODGSON): author: 1849, Nov. 24— ————; b. Manchester, Eng. Living there till her sixteenth year, she became familiar with the Lancashire dialect and local color, and thus acquired material for *That Lass o' Lowrie's* (1876), which story made her famous. Her parents emigrated to America 1865, and settled in Knoxville, Tenn.; and soon afterward she began to write, contributing short stories to the magazines. In 1873 she was married to Dr. Luan M. B., of Knoxville, with whom she took a European tour, and on returning to the United States resided in Washington, D. C. The fame of *That Lass o' Lowrie's* revived some earlier stories, such as *Surly Tim's Trouble*, which had made little or no impression at

BURNETT PRIZES—BURNEY.

the time of their publication. A number of her earlier tales were soon reprinted without her consent, among them being *Pretty Polly Pemberton*, *Kathleen Mavourneen*, *Theo*, *Miss Crespigny*, and *Lindsay's Luck*. Her dialectal power and genius of observation were shown again in *Louisiana* (1880)—a sketch from among the mountaineers of N. C., brief, but of great strength and pathos. *A Fair Barbarian* followed (1881), and *Through One Administration* (1883). These stories all were published serially, and the last-named had a curious history not fully revealed to the public. *Little Lord Fauntleroy* (1886) is one of the most successful of modern juvenile stories; has been dramatized, and translated into several foreign languages. Among her works are: *The Pretty Sister of José* (1889); *Little Saint Elizabeth, and Other Stories* (1890); *The One I Knew Best of All* (1893), etc.

BURNETT PRIZES, THE: two theological premiums, founded by Mr. Burnett (1729–84) of Dens, Aberdeenshire, Scotland. These prizes (not less than £1,200 and £400) are awarded every 40 years in Aberdeen for the two best essays on 'The evidence that there is a Being all-powerful, wise, and good, by whom everything exists,'—evidence 'independent of written revelation.' The competition is open to the whole world, and the prizes are adjudicated by three persons appointed by the trustees of the testator, together with the ministers of the Established Church of Aberdeen, and the principals and profs. of King's and Marischal colleges, Aberdeen.

BURNETT'S DISINFECTING LIQUID AND ANTISEPTIC FLUID: introduced by Sir W. Burnett for the purpose of deodorizing the bilge-water of ships, sewerage-water, etc. It is a strong solution (sp. gr. 2) of chloride of zinc, accompanied by a small amount of chloride of iron; and when intended to be used, it is mixed with water in the proportion of one pint to five gallons of water. The liquid acts only as a *deodorizer* and *antiseptic* (see **ANTI-SEPTICS**), and does not yield any vapor which can exhibit the properties of a disinfectant (q.v.). It is of service in preserving dead animal tissues, as in the dissecting-room, and in jars containing anatomical specimens. It has little action on knives or steel instruments. When added to bilge or sewerage-water, the chloride of zinc (ZnCl) mainly acts by decomposing the offensive sulphide of ammonium (NH_4S), which it does by forming the sulphide of zinc (ZnS) and chloride of ammonium (NH_4Cl), both of which are odorless. The strong solution of chloride of zinc has also been applied to the preservation of timber, and the process of so treating wood is called, after its inventor, *Burnettizing*. *Crewe's* disinfectant liquid is chemically the same as the above.

BURNEY, *bér'nĩ*, CHARLES, MUS. DOC.: 1726–1814, Apr. 19; b. Shrewsbury, Eng.: author of the *General History of Music*. Having studied music in his native city, in Chester, and under Dr. Arne in London, he commenced giving lessons. After composing three pieces—*Robin Hood*, *Alfred*, and *Queen Mab*—for Drury Lane, B. left London, and settled at Lynn, in Norfolk, where he designed his work on the *History of Music*. In 1770–72,

BURNISH—BURNOUF.

he travelled in France, Italy, the Netherlands, and Germany, collecting materials for his proposed work, and published an essay on the *Present State of Music in France and Italy*, etc. (2 vols., Lond., 1772). This was followed by his *General History of Music from the earliest Ages to the present Period* (4 vols., Lond. 1776–89). Besides other works B. wrote a *Life of Handel*, and nearly all the musical articles in *Rees's Cyclopædia*. In 1789 he became organist to Chelsea Hospital, where he died. He was intimately acquainted with many of the most eminent men of the day, including Edmund Burke and Dr. Johnson.—His second daughter, FRANCISCA B. (afterward Madame D'Arblay), became distinguished as authoress of the novels *Evelina*, *Cecilia*, *Georgina*, and *Camilla*: see D'ARBLAY, FRANCES.

BURNISH, v. *bér'nish* [F. *brunir*, to polish; *brunissant*, polishing: Sw. *bryna*, to sharpen; *brynsten*, a whetstone]: to make bright and glowing by rubbing; to polish by friction; to make smooth and bright by rubbing; to become bright by friction: N. lustre; brightness. **BUR'NISHING**, imp. **BUR'NISHED**, pp. *-nished*, polished: **ADJ.** that has been made bright and glowing by rubbing. **BUR'NISHER**, n. the person or tool that burnishes.

BURNLEY, *bér'nlē*: thriving town and parliamentary borough in Lancashire, in a narrow vale on the banks of the Brun, near its junction with the North Calder, 24 m. n. of Manchester. It has manufactures of cottons and woollens, calico printing works, iron and brass foundries, machine-making works, breweries, tanneries, and rope-works. There are collieries in the vicinity, and traffic is facilitated by railways and canals, which unite it with the principal centres of trade in Lancashire and Yorkshire. B. returns one member to parliament.

A Roman vicinal way passed through the town, part of which is still known and used as the 'Long Causeway.' Roman coins, pottery, urns, etc., have been found near the town, and an extensive series of beacons, encampments, dikes, etc., occupy the slopes of the hills in the neighborhood for a linear distance of more than 10 miles. From the name of the river, *Brun*, and other circumstances, these slopes are supposed to furnish a very probable site for the battle of Brunnanburh, so celebrated in Saxon history. Pop. of parliamentary borough (1881) 63,502; (1891) 87,058.

BURNOOSE, n. *bér'nós* or *-nôz* [Ar. *burnus*, a kind of high-crowned cap, a cap and cloak: Sp. *albornoz*, a Moorish cloak]: Arabic name of a garment worn in Algeria, Morocco, and other parts of n. Africa. It is a large woolen mantle, worn above the other attire of the natives, and having a hood, which is thrown over the head in rainy weather. The B. is generally white, though distinguished individuals wear it of various colors—blue, green, red, etc. It has been long in use among the Spaniards under the name of *albornoz*.

BURNOUF, *bür-nôf'*, EUGENE: 1801, Apr. 1—1852, May 28; b. Paris: distinguished orientalist. After entering on

the study of law, he betook himself to the oriental languages, especially those of India and Persia. In conjunction with Prof. Lassen, of Bonn, he published, 1826, *Essai sur le Pali*, which was followed, 1827, by *Observations Grammaticales sur quelques Passages de l'Essai sur le Pali*. His great aim, however, at this time, was to obtain a complete knowledge of the remains of the religious literature in the Zend, or old Persic language, neglected since the time of Anquetil du Perron, or, at least, not philologically and critically examined. B. undertook to decipher those curious MSS. which Anquetil du Perron had brought home with him, and which lay unregarded in the *Bibliothèque Impériale*. He commenced by causing the *chef-d'œuvre* of old Persic literature, the *Vendidad-Sadé* (one of the books of Zoroaster), to be lithographed with great care, and he published from time to time in the *Journal Asiatique* the brilliant results of his laborious studies, which drew upon him the regard of the learned world. In 1834, he published the first vol. of his *Commentaires sur le Yaçna l'un des Livres Liturgiques des Perses*, a work which, for the first time, rendered possible a knowledge not only of the dogmas, but also of the language of Zoroaster. It is a master-piece of conscientious industry, with copious lingual and antiquarian lore. His studies in the Zend language induced him to make an attempt to decipher the cuneiform inscriptions of Persepolis, in his *Mémoire sur deux Inscriptions Cunéiformes* (Par. 1836). In 1840, he published the text with a translation of the *Bhāgavat-Purāna*, a system of Indian mythology and tradition. As the fruit of his study of the Sanskrit books of the Buddhists, appeared 1845 the *Introduction à l'Histoire du Bouddhisme*. See BUDDHISM. This great work absorbed for six years the whole energies of B., who was now the recognized successor of Silvestre de Sacy. In full tide of work he died.

BURNS, JABEZ, D.D.: 1805-76; b. Oldham, near Manchester, England. Baptist minister, one of the most prolific religious writers of the 19th c. He was educated at Chester, and afterward at Oldham Grammar-school. After helping his father as a medical practitioner, and acting as assistant in a drapery establishment, he joined the Methodist New Connection, and removed at the age of 21 to London. In 1828 and '29, he published his first two works, *The Christian Sketch-book* and *The Spiritual Cabinet*, which were very popular with the religious public. After ministerial service at Perth, Scotland, for a few years, he returned to London, 1835, to become minister of the General Baptist congregation assembling in New Church Street Chapel, Marylebone. Here his fame increased, and large numbers flocked to hear him. He was elected by the body to which he belonged to fill various posts of honor, and lectured in all parts of the United Kingdom on temperance, peace, abolition of capital punishment, etc. In 1839, Dr. B. became editor of the *Temperance Journal*. About 1846, he received the degree of D.D. from the Wesleyan Univ. of Middletown, Connecticut. Meantime his pen had not been idle, the number of his separate works being upward of 30, some of them consisting of a number of vols. and one of them, *Sketches and*

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Skeletons of Sermons, of 15 vols., having reached the 14th edition. The following are the names of a few: *Christian Exercises for every Lord's Day* (1858); *Christian Philosophy* (1849); *Deathbed Triumphs of Eminent Christians*; *Light for the House of Mourning* (1850); *Pulpit Cyclopædia*, 4 vols. (1846-60); *Marriage Gift-book and Bridal-Token* (1862); etc.; all highly popular among a large section of the English and American evangelical and religious world.

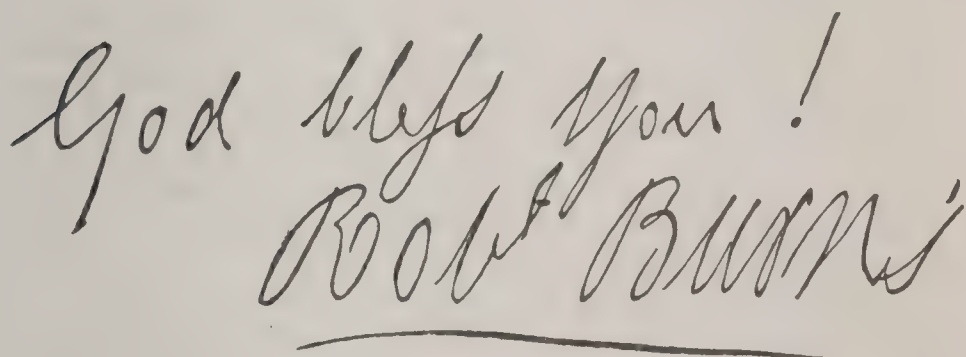
BURNS, ROBERT: 1759, Jan. 25—1796, July 21; b. in a small cottage near Ayr: great lyric poet of Scotland. His father, then a nursery-gardener, afterward occupant of a small farm, had to struggle all his life with poverty and misfortune, but made every exertion to give his children a good education; and the young poet had an amount of instruction and miscellaneous reading which, to those unacquainted with the habits of the Scottish peasantry, would seem incompatible with the straitened circumstances and early toil which were his lot. About his 16th year, he began composing verses in the Scottish dialect, which attracted notice in the vicinity, and extended the circle of his acquaintance; and thus he became exposed to temptations which, acting on an extremely sociable and passionate disposition, broke in upon the previous sobriety and correctness of his life. A small farm, on which he had entered with his brother in 1781, proved far from a prosperous undertaking; and being harassed and embittered by other misfortunes—the results of imprudence—he resolved to leave his native land, and go to Jamaica. Partly to procure the means of paying his passage, he published a collection of his poems at Kilmarnock, 1786. The reception these met with was highly favorable, and his genius was recognized in quarters where he had not looked for notice. While preparing to embark he received a letter encouraging him to go to Edinburgh, and issue a new edition. This was the turning point of his life. During his stay in the Scottish metropolis he associated with men eminent in letters, rank, and fashion, and his conversational powers excited little less admiration than his poetry. The profits of the publication were considerable, and enabled him to take the farm of Ellisland, near Dumfries, where he settled, 1788, having publicly ratified his marriage with Jean Armour. With his farm he conjoined the office of an exciseman; but after three or four years, he was obliged to give up farming, and from that time lived in Dumfries, dependent on his salary from the Excise, which, at first only £50, never rose above £70. The striking contrasts in the lot of the rich and the poor with which his residence in Edinburgh had impressed him, made him hail the French Revolution with enthusiasm; and some imprudent expressions having been reported to the authorities, destroyed his prospects of promotion in the service, and only the influence of a friend prevented him from losing his office. Such was then the terror of innovation, and the hatred of everything like liberal opinions, that many of the better classes, who had fêted the poet, now shunned the 'Jacobin,' as they stigmatized him. Embittered by what he felt an injustice, he recklessly allowed those habits of dissi-

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pation to grow upon him which made the more respectable of all classes look coldly on him ; and the remorse thus occasioned in his calmer moments aggravated the tendency to melancholy which the gloom and toil of his early years had probably implanted in his constitution ; and, broken in health, he died.

The poetry of B. is purely the outpouring of the moment—the response of the feelings to the immediate circumstances of life. Its charm and power lie in the justness of the feelings expressed, and in the truthfulness and freshness which it derives direct from life. Seldom have such manliness, tenderness, and passion been united as in the songs of Burns. They formed the first awakening of the spirit of true poetry in Britain after a long slumber. The popularity that B. instantly acquired has continued unabated, not only in his native Scotland, but wherever English is spoken ; his poems have been translated also into almost every European tongue. Dr. Currie, of Liverpool, published the first collected edition of his poems and letters, with a life (4 vols. Lond. 1800). Several more complete collections have appeared since, such as that by Allan Cunningham (8 vols. Lond. 1834), and that by Mr. Scott Douglas, of which the first volumes appeared in 1877. A life of B., by Lockhart, appeared, Edin., 1828. In *The Life and Works of Burns* (Edin. 1851–2), by R. Chambers, the poems are incorporated in the narrative in chronological order.

In 1859, the centenary of B.'s birth was celebrated with great enthusiasm, not only in every city and almost in every village of Scotland, but in the chief cities of England, and throughout America, the British colonies, and India.

A handwritten autograph in cursive script. The first line reads "God bless you !" and the second line reads "Robert Burns". The signature is written in dark ink on a light background.

Autograph of Burns.

BURNS AND SCALDS: injuries to the living body by excessive heat—a scald implying that the heat proceeded from a fluid medium, as boiling water ; a burn from a solid. The injury is much the same in both cases ; therefore the directions for the treatment of burns are applicable also to scalds. These injuries may be divided into three classes : 1. Burns resulting in simple redness of the skin ; 2. Burns resulting in vesication or blistering ; 3. Burns resulting in sloughing or death of the part. The first object, after the accident has occurred, is to relieve the suffering ; and cold applied either in the form of ice or water seems in most cases to have almost a specific power in allaying pain and

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checking the inflammation. In other cases, moderate warmth is found more efficacious, and the guide must be mainly the sensations of the sufferer. In very severe cases, opium or chloroform may be used. But if the injury be very serious, the patient complains less of pain than of cold; he shivers, is much depressed, and must be well supplied with stimulants, to prevent his dying from the shock.

In Britain, a favorite local application is the Carron-oil, which derives its name from the famous ironworks, where it has been used for many years. It consists of equal parts of olive-oil and lime-water, and should be applied on linen rags or cotton-wool. Blisters may be pricked, and the contained serum allowed to trickle away, but on no account is the raised skin to be removed. The dressings should not be changed oftener than cleanliness requires; and as each portion of the old dressing is removed, it must at once be replaced with fresh, so that as little exposure as possible of the burnt surface may take place. The main principle of treatment is exclusion of the air from the injured part; and so long as this is effected, it matters but little what remedial agent is employed. Great care must be taken in the treatment of a sore resulting from a burn, that the contraction of the scar does not cause distortion of the neighboring parts.

When the clothes catch fire, the person should lie down on the floor, and roll herself, or be rolled in the rug, table-cover, or anything sufficiently voluminous to stifle the flames; and afterward the clothes, especially stockings, should be removed with great care, lest the cuticle should separate with them, which would materially increase the sufferings of the patient.

Extensive scalds or burns are very fatal to young children; and it must be remembered that their skin is more susceptible to external impressions, and will suffer from a degree of heat innocuous to an adult. Infants have frequently been scalded to death in too hot baths, or by too hot fomentations. The principles of treatment for burns produced by the contact of chemical agents to the skin, are the same as those for burns by fire.

BURNSIDE, AMBROSE EVERETT, General: 1824, May 23—1881, Sep. 3; b. Liberty, Ind. His ancestors had emigrated from S. C., and Ambrose, the fourth of nine children, was born at the edge of what was then a wilderness. He was apprenticed, after a most ordinary school education, to a tailor, and was for a time in a partnership in that business in the town of his birth. Having accidentally gained the friendship of the congressman of his district, he received an appointment as a candidate at the Military Acad. at West Point, and entered the class of 1847. He graduated near the close of the war with Mexico, and was sent to that city during its military occupation. For some years he did garrison duty on the frontier, but in 1852 married, and resigned his commission. He invented the Burnside breech-loading rifle, but was unsuccessful in getting it adopted by the war dept. and was eventually forced into bankruptcy. For a time he had

BURNT—BURNT SIËNNA.

employment under George B. McClellan on the Ill. Central railroad, and in 1860 was treas. of that road. In 1861 Gov. Sprague, of R. I., gave him the command of the 1st regt. of the militia of that state. He commanded a brigade at the first battle of Bull Run, and 1861, Aug. 6, was commissioned a brig. gen. of vols. He organized the expedition which occupied Newberne, N. C., and occupied Fort Macon, and Beaufort. He was afterward commander of the 9th army corps, and did excellent and important work at the battle of Antietam. In 1862, Nov. 10, he was appointed commander of the Army of the Potomac. The unfortunate failure at Fredericksburg affected B.'s reputation disastrously, though perhaps with injustice. An order, however, issued by B. subject to the president's approval, formally dismissing such generals as Hooker, Franklin, Newton, and Brooks, having failed of approval, B. was superseded by Maj. Gen. Hooker, and transferred to the dept. of the Ohio. B. did some good fighting in Tenn., but being returned to the Army of the Potomac was unsuccessful in the management of operations in the Wilderness and at Cold Harbor and Petersburg, and charges having been brought against him, of disobedience, by Gen. Meade, a court of inquiry was ordered, and he was found 'answerable for the want of success.' He resigned 1865, Apr. 15, and a year later was elected gov. of R. I., and re-elected 1867 and 1868. He passed some time in Europe, and in 1875 was elected U. S. senator from R. I., and in 1880 re-elected. He died suddenly at Bristol, R. I. Gen. B. was a man of most agreeable manners and disposition.

BURNT, *bérnt*: pt. and pp. of BURN, which see: applied to a peculiar taste and flavor of certain wines and spirits. **BURNT SUGAR**, a preparation used for darkening liquors.

BURNT-EAR, n. *bérnt'ēr*: a disease in corn in which the whole ear appears black, caused by a fungus.

BURNTISL'AND: seaport town of Fifeshire, Scotland, on the n. shore of the Firth of Forth, about 8 m. n.n.w. of Edinburgh. It consists of one long street, clean and well kept, with a back street running parallel, and some diverging lanes. B. is an important station of the North British railway, having a steamboat ferry connecting it with Granton, the station on the opposite side of the Forth. It has a commodious harbor, greatly improved 1876, and a dock. Its trade consists principally of distilling, and the shipping of coal and iron; and in summer it is considerably resorted to as a convenient watering-place. It unites with Kinghorn, Dysart, and Kirkcaldy to send one member to parliament. Pop. (1871) 3,422; (1881) 4,271; (1891) 4,692.

BURNT-OFFERING, n. *bérnt-ôf-fér-îng*: something burnt on an altar, as an offering for sin, called also *burnt-sacrifice*; a holocaust. See SACRIFICE.

BURNT SIËN'NA: fine orange-red pigment, transparent and permanent, used both in oil and water color painting; obtained by simply burning the ferruginous ochreous

BURNT STONES—BURR.

earth known as Terra di Sienna. Excellent greens are produced by mixing it with Prussian blue. It mixes well with other pigments generally, and dries quickly.

BURNT STONES: antique carnelians found in ruins, and seeming to have been acted upon by fire, having a dull appearance externally, but exhibiting a beautiful red color when held up to the light. They are sold at a very high price, particularly if to the natural beauty of the stone is added the merit of fine workmanship. They were formerly more esteemed than now, and an imitation of them, by burning the upper surface of carnelians with a hot iron, was very common.

BURNT UMBER: pigment of a russet-brown color; semi-transparent. It mixes well with other pigments, and dries quickly. It is obtained by burning umber, an ochreous earth, containing manganese, and deriving its name from the place where it was first discovered—Umbria in Italy.

BURNUG'GUR: town of India, in Guzerat, the territory of the Guicowar, 52 m. n. from Ahmedabad; n. lat. 23° 48', e. long. 72° 38'. It is a place of considerable trade, mostly in the hands of wealthy Brahmans. Pop. 12,000.

BURR, n. *bër* [see **EUR**]: the lobe of the ear; a prickly seed.

BURR, n. *bër* [a word imitative of the sound: Swiss, *burren*, to mutter: prov. Sw. *borra*, to buzz like a beetle: Scot. *birr*, the sound as made by a spinning-wheel]: the whirring, guttural, or rough sound made by some in pronouncing the letter *r*, as in the mouth of a north of England man.

BURR, n. *bër*: the blossom of the hop; the first appearance of its flower. *Note.*—This word has doubtless the same origin as the Scot. *braird*, meaning the first sprouting of grain—and may be connected with *bur* or *burr*, as in *burdock*, from the rough appearance of the hop-cone.

BURR, AARON: Presb. minister, pres. of the College of New Jersey: 1716–57; b. Fairfield, Conn.; of Puritan ancestry. At the age of 19 he graduated at Yale College, and at 22 became pastor of the Presb. Church of Newark, N. J., where he quickly won a reputation for eloquence and scholarship. In 1748 he was elected pres. of the College of New Jersey; in which office he continued until his death, caused by overwork. B. was practically the first pres. of the institution, Jonathan Dickinson, the first by the record, having held the office only a few months. Of his published works the most important are the *Newark Latin Grammar*, used at Princeton for many years, and the *Supreme Divinity of Our Lord Jesus Christ*.

BURR, AARON: statesman: 1756, Feb. 6—1836, Sep. 14; b. Newark, N. J.; son of Aaron B. (q.v.), a clergyman from Conn. His grandfather on his mother's side was the celebrated Rev. Jonathan Edwards, and he was educated by his uncle the Rev. Timothy Edwards, of Elizabethtown,

N. J. A studious boy, B. was prepared to enter Princeton college at the early age of 11, but was not permitted under the rules to enter at that time, but did so in 1763, by special favor, in his 13th year. He graduated with distinction 1772, Sep. A year later, after giving considerable time and study to religious questions, he adopted infidel opinions, and proceeded to form his character on the basis of that of Lord Chesterfield. He began the study of law 1774, but in 1775, at the outbreak of the Revolution, volunteered into the patriot army. He accompanied Benedict Arnold on his expedition to Quebec, and returned a major, with a brilliant reputation for courage and ability. For a short period he was a member of Gen. Washington's family, but retired from it to accept an appointment as aide on the staff of Gen. Putnam. From this time forward Washington and Burr never agreed. In 1777, B. was made lieut.col., distinguishing himself at Monmouth, and in 1779, after four years of service, resigned on account of his health. He resumed the study of law, was admitted to the bar, and began practice in Albany. He married Mrs. Theodosia Prevost 1782. She died of cancer in 1794, leaving one daughter, a most accomplished and brilliant woman, passionately loved by her father, and who died at sea, 1813, Jan. In 1783, B. settled in New York, where he became one of the leaders of the bar. He served twice in the New York legislature, held the office of attorney-gen. for two years, and in 1791 was elected to the U. S. senate, where he served for six years with the republican party, exhibiting remarkable ability. On completing his term in the senate, B. was made a member of the New York assembly. In 1800 he was elected vice-pres. on the ticket with Thomas Jefferson, but in this contest he discovered, as was alleged, political traits which caused him to be generally distrusted. He was afterward defeated as a candidate for the governorship of New York, and in connection with this canvass there arose the trouble with Alexander Hamilton that resulted in the latter being challenged by B. The parties met at Weehawken, N. J., on the morning of 1804, July 11 and Hamilton fell, mortally wounded, at the first fire. This tragedy raised such public feeling against him that, a verdict of murder having been returned by the coroner's inquest, B. fled to South Carolina. He was indicted for murder, but after a time the excitement wore itself out and he returned to Washington, where he filled his term as vice-pres. His political prospects were now blasted, and he turned his attention in the direction of the West, which he visited, going from Pittsburgh to New Orleans, and exciting much enthusiasm. It was at this time that B. made the acquaintance of Harman Blennerhassett (q.v.), an acquaintance which resulted in one of the worst scandals attached to B.'s name. He now appears to have formed the idea of controlling a large tract of land, either by conquest or purchase, and of establishing a government, with himself at its head. He purchased property on the Washita river and continued to prosecute his plans, when 1806. Oct. 27, the president, who

had kept himself informed of B.'s proceedings issued a proclamation denouncing the whole undertaking as treasonable. B. was arrested 1807, Jan. 14, escaped, and was again arrested in Ala. and conveyed to Richmond, Va. Here he was tried for treason, the trial beginning May 22, and lasting six months. On Sep. 1, the jury returned a verdict of 'not guilty' of the indictment for treason, and B. was afterward acquitted on technical grounds of the additional charge of misdemeanor.

He was now completely ruined in character and fortune, in his own country, and accordingly sailed for England, where he hoped to establish himself, but from which country he was eventually expelled. He spent some time in Sweden, Denmark, and Germany, and in 1810, Feb., reached Paris. Here he became reduced to penury, and after suffering the severest straits returned to England, where he was forced to remain for over a year and a half before he was able to leave for America. Successful in this at last, he reached Boston, 1812, May, and went thence to New York. Here he opened an office in Nassau street, and began to practice law, when the death of his grandchild, and soon afterward of his daughter, completely crushed him. He was not only unsuccessful in practice, but was entirely ostracized from society, yet he lived 23 years longer, and at the age of 78 married Madam Jumel, the wealthy widow of a French merchant. They separated, however, on account of B.'s extravagances, and during his latter days B. was dependent on the charities of a Scotch woman who had been his friend in former years. She furnished him a home at Port Richmond, Staten Island, where he died. His remains, in accordance with his request, were buried in the cemetery at Princeton, near those of his father and grandfather.

BURRANPOOTER: see BRAHMAPUTRA.

BURRAS-PIPE, n. *bŭr'ras-pĭp*: a tube to contain lunar caustic or other corrosives.

BURREL, n. *bŭr'rĕl* [OF. and Prov. *burel*; O.L. *burnis*, red, reddish]: a sort of pear, otherwise called the red butter-pear, from its smooth, delicious, and soft pulp.

BURRHSTONE, or BURRSTONE, n. *ber'stŏn*, or BURRLESTONE, n. *berl'stŏn* [*burr* or *birr*, a word imitative of a rubbing, grating, or rough sound—so named from the bite or roughness of the stone: Ger. *burren*, to whirr, to purr]: a silicious or flinty stone, largely used in the manufacture of the finer millstones: see BUHRSTONE.

BURRIANA: town of Spain, province of Castellon-de-la-Plana; about 8 m. s. from the town of that name; on the left bank of the Rio Seco, about 1 m. from its mouth in the Mediterranean. The people are engaged chiefly in agriculture and fishing; exports are wine, oil, and fruit. Pop. about 15,000.

BURRILL, *bŭr'ril*, JAMES: 1772–1820; b. Providence, R. I.: lawyer and statesman. He graduated 1788, studied law, and was admitted to the bar 1791. He served as attorney-gen. of R. I. 1797–1813, became chief justice 1816, was

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elected U. S. senator 1817, and was prominent in the debates on the Missouri Compromise, which he ably opposed.

BURRILLVILLE: town and township of Providence co., R. I., on the Providence and Springfield railroad, about 20 m. n.w. of Providence. It has a national bank, and manufactories of woolen and cotton goods. The township contains the villages of Pascoag, Harrisville, Tarkiln, Mohegan, Oakland, Mapleville, and Glendale. Pop. of town (1890) 5,492; (1900) 6,317.

BURRITT, *bŭr'īt*, **ELIHU**: 1811–79, Mar. 7; b. New Britain, Conn.: known as 'the learned blacksmith.' He was brought up to the trade of a blacksmith; but devoted all his leisure to study, especially to mathematics and languages. In the latter field of study, his range was very wide, embracing more or less Latin, Greek, Hebrew, Arabic, and other oriental tongues, and almost all modern European and Slavonic languages. He is, however, much better known to the world as an earnest apostle of peace than as a scholar. To preach the doctrine of 'universal brotherhood,' he travelled through the United States and Europe. His chief works are, *Sparks from the Anvil*, *Olive Leaves*, *Peace Papers*, and *Lectures and Speeches*. He was prominent in the Peace Congresses of Brussels, Paris, Frankfort, London, and Edinburgh, and in advocating an ocean penny-postage. For many years he resided in England, part of the time as U. S. consul at Birmingham.

BURROCK, n. *bŭr'rōk* [AS. *burg*, hill, and *ock*, diminutive termination]: a small dam in a river for catching fish.

BURROUGHS, **JOHN**: an American essayist and descriptive writer; b. 1837, April 3, in Roxbury, N. Y.; received an academic education; was clerk in the Treasury Department 1864–73, and national bank examiner 1873–84. He settled on a farm in New York state and devoted himself to the study of nature and literature. His publications include *Wake-Robin*, *Signs and Season*, *Pepacton*, *Riverby*, *Birds and Poets*, *Winter Sunshine*, *Locusts and Wild Honey*, *Fresh Fields*, *Indoor Studies*, *Whitman, a Study*, *Squirrels and Other Fur Bearers*, etc.

BURROW, n. *bŭr'rō* [AS. *beorgan*, to protect, to shelter: Dut. *berghen*, to hide, to cover: Gael. *buraich*, to dig]: an underground hole or excavation, where small animals such as the rabbit live: V. to make holes underground and live in them; to live in a concealed place. **BUR'ROWING**, imp. **BUR'ROWED**, pp. *-rōd*.

BURROWING OWL, or **COQUIM OWL**: see **OWL**.

BURROWS, *bŭr'rōz*, **WILLIAM**: 1785–1813; b. near Philadelphia, Penn.: naval officer. He served in the war with

Tripoli, holding the rank of lieutenant; returned to this country in 1807. The following year he commanded a gun-boat on the Delaware, and enforced the embargo. In command of the *Enterprise*, he encountered the British brig *Boxer*, 1813, Sep. 1, off Portland, Me., and captured her after an engagement of 45 minutes. The commanders of both vessels, being killed in this action, were buried side by side in Portland.

BURSA, n. *bēr'să*, BURSÆ, plu. *bēr'sē* [Gr. *bursa*, skin, leather]: also BURSA MUCOSA, *mū-kō'să*, BURSÆ MUCOSÆ, plu. *mū-kō'sē* [L. *mucōsus*, slimy, mucous]: small sacs or cavities inclosing a clear viscid liquid, found interposed between surfaces which move upon each other so as to insure their free and easy movement.

BURSARY: annual proceed of a sum permanently invested for maintenance of a student at a university. A number of small bursaries were till lately the only equivalents at the Scotch universities for the scholarships of the English. Their large number, and the small amount of each was, in course of time, found to have a prejudicial effect, particularly at Aberdeen, which had the largest number, and where a practice had obtained of multiplying bursars on the foundation, at the discretion of the senatus or patrons. The general effect of the ordinances issued by the commissioners of 1863, was to consolidate some of the smallest bursaries into others of greater value, and in some instances to remove restrictions that had proved injurious, while a large number were thrown open to competition. There are, however, still a large proportion of purely presentation bursaries, and in some there is a preference given to a particular name, or to natives of a particular district. Since 1863, a large number of scholarships, tenable by graduates, and fellowships, have been founded by private individuals on a more liberal scale than the old bursaries, particularly in Edinburgh and Glasgow. At Edinburgh there are at present about 200 bursaries, of which above 100 are in arts, and 30 in theology; they vary in amount from £2, 15s. 6d. to £100. The scholarships for graduates are about 30, varying in amount from £60 to £120; and there are about eight fellowships varying from £100 to £160. Glasgow has 190 bursaries, many of them small; also 14 exhibitions to Balliol College, Oxford, on the Snell foundation (q.v.), and about 30 scholarships of from £50 to £200. At St. Andrews there are 81 bursaries belonging to the United College, varying in amount from £5 to £50, 20 belonging to St. Mary's, varying from £6 to £50; beside other bursaries, and a few scholarships of good amount. At Aberdeen there are about 250 bursaries, varying from £5 to £50; and 11 scholarships of £65 to £70, tenable for four years, also some valuable exhibitions to Cambridge.

BURSCH, n. *bōrsh*, BURSCHEN, n. plu. *bōrsh'ën* [Ger., a room-mate, a chum]: a student in a German university.

BURSCH'ENSCHAFT: a fellowship organization formed by German university students in the early part

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of this century for the purpose of placing themselves on record as against the quarrelsome and otherwise vicious habits at that time frequent among the students. The design of this association contemplated also the awakening of a spirit of nationality, in the interest of the Fatherland, by uniting the students of different universities in one body. The first union of this nature occurred at Jena, 1815; successive conventions were held at Heidelberg, Halle, Tübingen, and other university towns. The German war of independence had attracted many of the students who engaged in it, and who afterward believed that it would be followed by certain greatly demanded political reforms. This, however, did not occur, and one result of the disappointment was a general meeting or festival of all the B. at the Wartburg, 1817, Oct. A year later delegates from 14 German universities adopted a constitution, which was agreed to by nearly all the institutions, and also a resolution to hold annual conventions. The colors of the German empire, black, red, and gold, were chosen, and the B. began to assume a somewhat formidable political standing. The assassination of Kotzebue was charged against the B., who had declared him a traitor to his country, and the German government now took steps to suppress the organization. This movement was unsuccessful, but drove the members to meet secretly instead of openly. Conventions were held at Bamberg in 1827, and Frankfurt in 1831; and in 1833, June, a grand united revolutionary movement was made by the students at Frankfurt-on-the-Main, in which nearly 2,000 students were involved. The attempt was unsuccessful. Students from nearly all the German universities were arrested and prosecuted, and many of them were imprisoned and disfranchised. This dampened the ardor of the students, and their organization was very quiet for a number of years. In 1848 the students of Vienna brought it again into notoriety by the part which they took in the revolution of that year.

BURSE, *n.* *běrs* [*F. bourse*, a purse, an exchange—from *mid. L. bursa*, a small leather purse—from *Gr. bursa*, leather, skin]: a public building where merchants and money-dealers meet on business; an exchange. **BURSAR**, *n.* *ber'sēr*, the treasurer of a college or monastery; a student in a Scotch university to whom a sum of money is paid out of a fund set aside for that purpose; an exhibitor. **BUR'SARSHIP**, *n.* the position or office of a bursar. **BUR'SARY**, *n.* *-ĩ*, the treasury of a college or monastery; the sum allowed to a bursar; an exhibition.

BURSE, *n.* *běrs* [*It. borsa*, a purse (see **BURSE** 1)]: in the *R. Cath. Ch.*, a square stiffened case or purse, which contains the 'corporal' required in the celebration of mass (see **CORPORAL**). **BURSIFORM**, *a.* *běrs'ĩ-fayrm* [*mid. L. bursa*, a purse; *forma*, shape]: shaped like a purse; sub-spherical.

BURSICULE, *n.* *běrs'ĩ-kŭl*, or **BURSICULA**, *n.* *běr-sĩk'-ũ-lũ* [*L. diminutive of bursa*, skin]: in *bot.*, the part of the

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rostellum of the orchids excavated in the form of a sack. **BURSICULATE**, a. *bēr-sīk'ū-lāt*, purse-like.

BURSLEM, *bērs'lēm*: town of Staffordshire, England, on the Trent and Mersey canal, in the pottery district; on a branch of the North Staffordshire railway. It forms part of the parliamentary borough of Stoke-upon-Trent. The abundance of coal and the variety of clays have made B., since the 17th c., one of the chief seats of the fictile manufacture. Porcelain and pottery of all kinds—Parian, iron, and stone ware, etc.—are produced on a large scale, as well as encaustic tiles. There is also a glass manufactory here. The affairs of the town are managed by a 'local board of health.' At Birche's Head, a mile and a half from B., is a large service reservoir of the Staffordshire Waterworks Company, from which the town and neighborhood are supplied with excellent water. A fine, new town-hall was erected 1865, which, besides the usual municipal offices, contains lecture-rooms and news rooms. B. was the native place of Josiah Wedgwood, who in the middle of the 18th c. greatly improved the manufacture of pottery. A Wedgwood memorial institute was founded 1863, to serve as a school of art, a free library, and a museum. An appropriate character is given to it by introducing into the ornamentation of the façade *terra-cotta* moldings, Wedgwood's jasper ware, etc. Pop. of B. (1871) 25,562; (1881) 27,108; (1891) 30,862.

BURST, n. *bērst* [Ger. *bersten*; AS. *berstan*; Sw. *brista*; O.H.G. *brestan*; F. *briser*, to break]: a sudden breakage; an explosion; a violent outbreak: V. to break open forcibly or with sudden violence; to break away from; to come upon unexpectedly; to break forth, or into, with violence; to rend by force. **BURST'ING**, imp.: ADJ. breaking forth; expanding: N. the act of breaking forth, or expanding. **BURST**, pp. **BURST'ER**, n. one who. **BURSTING-CHARGE**, the quantity of powder in a shell sufficient to burst it. **BURST-WORT**, a name sometimes given to the botanical genus *Herniaria* or Rupture-wort.

BURT, n. *bērt*: a flat fish of the turbot kind.

BURTHEN, n. *bēr'thn*, **BUR'THENSOME**, a., **BUR'THENSOMENESS**, n.: see **BURDEN** 1.

BURTON, n. *bēr'tn*: in a *ship*, a small tackle of two single blocks, said to be named from the inventor.

BURTON, *bēr'tn*, JOHN HILL, LL.D., D.C.L.: 1809, Aug. 22—1881, Aug. 10; b. Aberdeen. He was an advocate (member of the Scottish bar), author of a variety of works, all remarkable for ability, and several for original thought. B.'s father was an officer in the army, and his mother the daughter of an Aberdeenshire laird. Having graduated at Marischal College, Aberdeen, he became an apprentice to the profession of law in his native city; which he abandoned for the higher sphere of the Edinburgh bar. With time on his hands, he applied himself to study and letters. For a long series of years, from 1833, he was a contributor to the *Westminster Review* of articles on law, history, and political economy; and for sev-

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oral years he contributed to *Blackwood's Magazine* literary sketches. Among his original works are: *The Life and Correspondence of David Hume*, 2 vols. (1846); *Lives of Simon Lord Lovat and Duncan Forbes of Culloden* (1847), excellent biographies; *Political and Social Economy* (1849), valuable, condensed, and lucid contribution to the literature of social science; *Narratives from Criminal Trials in Scotland*; *A Manual of Scottish Law*; *A Treatise on the Law (Scottish) of Bankruptcy*; *The History of Scotland from the Revolution to the Extinction of the Last Jacobite Insurrection*, 2 vols. (1853); *The History of Scotland from Agricola's Invasion to the Revolution of 1688*, 7 vols. (1867-70); *The Book-Hunter* (1862); *The Scot Abroad*, 2 vols. (1864); *The Cairngorm Mountains* (1864). A new ed. of the *History of Scotland*, enlarged and partly rewritten, appeared in 8 vols., 1873. He edited vols. i. and ii. of the *Register of Privy Council (Scotland)* for 1545-78; and issued *A History of the Reign of Queen Anne*, 1879. The high merits of B.'s historical works have been universally admitted. He further edited the works of Jeremy Bentham (nominally in conjunction with the late Sir John Bowring), with an able introduction; and published a volume of *Benthamiana*. B. was, 1854, appointed sec. to the prison board of Scotland; and on the abolition of that board 1860, he remained as stipendiary manager and sec. in connection with the home office. He held the old office of historiographer royal for Scotland, was LL.D. of Edinburgh Univ., and D.C.L. of Oxford.

BURTON, *bér'tn*, ROBERT: author of the *Anatomy of Melancholy*: 1576-1640; b. Lindley, in Leicestershire, England. He studied at Brasenose and Christ Church, Oxford. 1616, he was appointed to the vicarage of St. Thomas, and In 1628, to the rectory of Segrave in his native county. He appears, however, to have continued all his life at Christ Church, where he died, leaving legacies of £100 each to the Bodleian and Christ Church libraries, and as many of his books as they did not already possess. A monument was erected to his memory in Christ Church Cathedral. B. is described by Anthony Wood as a good mathematician, a dabbler in nativities, a well-read scholar, and a thorough-paced philologist. 'As he was by many accounted a severe student, and a melancholy and humorous person, so by others who knew him well, a person of great honesty, plain-dealing, and charity. I have heard some of the ancient of Christ Church often say that his company was very merry, facete, and juvenile.' His *Anatomy of Melancholy*, in which he appears under the title of Democritus Junior, is one of the most curious *melanges* of heterogeneous elements ever put together. It consists mainly of an extraordinary mass of quotations from old and obscure writers, strung on a thread of rambling reflection; often tiresomely pedantic, but relieved by quaint touches of humor and feeling. In his own lifetime, it was highly popular and went through five editions; after that it fell into comparative oblivion, but is now again popular among lovers of quaint literature. Dr. Johnson said it

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was the only book that ever took him out of bed two hours before his usual time.

BURTON, *bēr'tn*, WILLIAM EVANS: comedian: 1804—1860, Feb. 9; b. London; son of a printer and writer on Bible Researches. It was intended that he should be a clergyman, but he early turned to editing and amateur acting, and soon made the stage his profession, spending several years on the Norwich circuit. He appeared at the Haymarket 1832, wrote *Ellen Wareham* and other plays, and came in 1834 to America, where he was noted and successful as a manager. He built the National Theatre in Philadelphia, and in 1841 took charge of one in New York, which was soon burned. He controlled what had been Palmo's Opera House in Chambers st., 1847–56, and for two years the Metropolitan Theatre in Broadway. He was unsurpassed in many comedy parts, and eminent as a Shakespearian scholar. He started the *Gentleman's Magazine* 1837, edited the *Literary Souvenir* 1838–40, and compiled a *Cyclopedia of Wit and Humor* (2 vols., 1858). He died in New York.

BURTON-ON-TRENT: market-town in Staffordshire, England, on the river Trent and the Midland railway. The Grand Trunk canal also passes the town, and enters the Trent below. A bridge of 34 arches, built before the Norman Conquest, here crossed the river, but was replaced 1864 by a new one of 29 arches. The growth of the town is due to the rapid extension of the brewing of ale, the staple product of the place. There are upward of 30 breweries in B., some of a magnitude elsewhere unparalleled. The two establishments of Bass and Allsopp cover together more than 250 acres of ground, and can produce yearly about two million barrels of ale. There are, of course, extensive cooperages, and also iron-foundries. The public edifices are not particularly noticeable. Pop. (1901) 50,386.

BURTSCHIED, *bürt'shīt*, or BORCETTE': town of Rhenish Prussia, about half a mile from Aix-la-Chapelle, with which it is connected by an avenue of trees. It has manufactures of woolen cloths and cassimeres, and celebrated sulphur springs and baths, with a temperature of 106°—155° F. Pop. about 13,380.

BURWHA, *būr'wâ*, or, as Dr. Barth spells it, BA'RUWA. town of Bornu, central Africa, on the w. bank of Lake Tchad, about 80 m. n.n.w. of Kuka. The town, which consists of closely-packed huts, is surrounded by high clay-walls, which, however, 'owing to the high mounds of rubbish imbedding them on all sides,' afford no protection whatever from the attacks of the Tawarek, to whom the inhabitants have to pay tribute. Fish in great quantities are caught in the adjoining lake, and are the chief food of the inhabitants, as well as their only article of commerce. Pop. about 6,000.

BURY, n. *bēr'ī* [F. *beurré*, butter]: a variety of pear, so named from its soft yellow flesh.

BURY, v. *bēr'ī* [AS. *birgan*; Dut. *berghen*, to hide, to

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stow away: Ger. *bergen*, to conceal: comp. Gael. *bùraich*, to dig, to inter]: to put or place anything in the earth for concealment; to lay a dead body in the grave; to inter; to hide or conceal; to overwhelm; in *Eng. Ch.*, to perform the burial service. **BURIED**, pp. *bēr'id*. **BURYING**, imp. *bēr'ē-ing*: N. the act of placing the dead in the earth. **BURYING-PLACE**, or **BURIAL-PLACE**, n. a graveyard; a cemetery. **BUR'IAL**, n. *-ī-āl* [AS. *byrgels*, and *byrigels*, a sepulchre]: the act of laying a dead body in the earth, in a tomb, in a vault, or among water, as at sea.

BURY, *bēr'ri*: flourishing manufacturing town in the s.e. of Lancashire, England; on a rising ground backed by hills on the n. and e. between the Irwell and the Roche, 9 m. n.w. of Manchester. It was early a seat of the woolen manufactures, carried on by Flemings, but these, though still considerable, now yield in importance to those of cotton. Besides spinning and weaving factories, there are important print, bleach, paper, and dye works, and some large foundries and engine manufactories. In the vicinity are excellent freestone quarries, and abundant coal-mines. The town has been much improved in drainage, and an ample supply of water has been secured from a distance. B. returns one member to parliament. Some improvements in the cotton manufacture arose here—notably, the invention by John Kay of the fly-shuttle. The late Sir Robert Peel was born in B., where his father established his great print-works. A bronze statue of Sir Robert has been erected in the old market place. Pop. (1881) 49,746; (1891) 57,206; (1901) 58,028.

BUR'YING BEETLE (*Necrophorus*): genus of coleopterous (q.v.) insects, or the tribe or family *Silphales*, with short club-shaped antennæ, remarkable for their habit of burying the bodies of mice, moles, and other small animals, in order to deposit their eggs in them, and to provide a supply of food for their larvæ. Some of the species, among which is *N. Vespillo*, the species of which the habits were first observed, are common in parts of Europe;



Burying Beetle.

and the known species are mostly natives of Europe and N. America. It is a black beetle, about an inch long,

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with two bright orange bands across its back, and having an excessively fetid smell, which long adheres to whatever it touches. Its sense of smell seems extremely acute, and a dead animal soon attracts it, a pair generally arriving together, male and female, to feed upon the body, and the male to proceed to its interment, if the body be sufficiently small, previous to which, however, they have sometimes to drag it to some distance to a place suitable for their purpose. The head of the insect is the only tool employed in the operation, and is held sloping outward, and employed in a manner which exhibits great muscular power. A furrow is first made around the body, then another within the first, and so on till the earth is so excavated from beneath, that the body begins to sink, when the insects, by great efforts, drag it down into the hole, and when it is fairly in, the excavated earth is thrown back over it. The female then lays her eggs in it; and when this is accomplished, and the cravings of appetite are satisfied, it is left for the larvæ, which are of a lengthened form, with six feet, whitish, and a brown head.

BURY ST. ED'MUNDS, or ST. ED'MUNDSBURY: ancient borough in Suffolkshire, England, on the Upper Larke; 26 m. n.w. of Ipswich. It is well built and delightfully situated. It returns one member to parliament. It has a trade in agricultural produce, but no manufactures. A very complete system of drainage has been carried out, the sewage being conveyed to a distance, and, by means of pumps, applied to irrigation. A new Corn Exchange was erected 1862; in 1864, the Suffolk General Hospital was rebuilt. B. received its name from Edmund, the Saxon king and martyr, who was crowned here on Christmas Day, 856; taken prisoner, and put to death by the Danes. On the site of his tomb, six priests founded a monastery; and here Canute raised a Benedictine abbey, which in time became the richest and most important in England, after that of Glastonbury. From 1,020 to its dissolution by Henry VIII., it was ruled by a line of 33 abbots. The abbot was a spiritual baron of parliament, had judicial authority in all causes within the liberty of B., had the power of inflicting capital punishment, and the privilege of coining. At the dissolution, the annual income was equivalent to £50,000 sterling. Of this magnificent establishment, little now remains but the western gate, erected 1327, a noble relic of the decorated Gothic style; and the 'Church-gate,' a quadrangular tower of massive simplicity, 86 ft. high. The churchyard, to which this tower formed the portal, includes, besides the abby ruins and some other buildings, the fine old churches of St. Mary and St. James. The celebrated grammar-school of B. was founded by King Edward VI. 1550, and is free to sons of the inhabitants of the town. It has 2 scholarships at Cambridge, and 6 exhibitions to each university, and has produced many eminent scholars. Among the many religious and charitable institutions connected with the abbey, of which portions still exist, is St. Saviour's Hospital, founded by that notable abbot,

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Samson, whose life and actions, as recorded by Jocelyn of Brakelond, Mr. Carlyle has so vividly recalled in his *Past and Present*. The poet Lydgate was a monk in this abbey; and Sir Nicholas Bacon was born here. At B., King John first met his indomitable barons before he signed Magna Charta. Parliaments were held here 1272, 1296, and 1446, the last of which ordered the arrest of Humphrey, the good Duke of Gloucester, who was found dead in his bed the morning after his arrest; and sovereigns, as late as Elizabeth's time, were often nobly entertained at St. Edmund's town. Three miles s.w. of B., the Marquis of Bristol has a splendid seat, Ickworth Park, a circular pile 90 ft. in diameter, and 140 ft. high. Pop. of B. (1871) 14,928; (1881) 16,211; (1891) 16,630.

BUS, n. *būs*: a contraction of *omnibus*.

BUSACCHINO, or BISAQUINO: see BISACQUINO.

BUSACO, *bô-sâ'ko*: ridge or serra on the n. side of the river Mondego, province of Beira, Portugal; about 20 m. n.n.e. of Coimbra. Here Wellington, with about 40,000 British and Portuguese troops, repulsed the attack of Massena with 65,000 French, 1810, Sep. 27. Unable to force the position, Massena turned it by a pass over an adjoining ridge, and Wellington retired behind the lines of Torres Vedras, which indeed it was his intention to do, had there been no battle.

BUSBY, *büz'bī*, RICHARD: famous English schoolmaster: 1606, Sep. 22—1695; b. Lutton, Northamptonshire. Educated at Westminster School, and Oxford, he was, 1640, appointed headmaster of Westminster School, which office he held till his death. He is the type of British pedagogues of the old style, alike for learning, assiduity, and the application of the birch. He was a most successful teacher, and at one time could point to no less than 16 occupants of the bench of bishops who had been educated in his school; and, altogether, he has the reputation of having 'bred up the greatest number of learned scholars that ever adorned any age or nation.' He published several works, chiefly for school use.

BUSCA, *bôs'kâ*: town of Piedmont, on the left bank of the river Maira, an affluent of the Po, about 9 m. n.w. of Coni. Excellent wine is produced in the vicinity. Pop. 9,375.

BÜSCH, *büşh*, JOHANN GEORG: 1728, Jan. 3—1800, Aug. 5; b. Alten-Weding, in Hanover: statistician; prof. of mathematics in the Hamburg gymnasium from 1756; founder and director of a notable commercial academy there 1767. His history of trade appeared 1781, his numerous writings were collected in 16 vols. at Zwickau, 1813-16, and those on commerce reprinted at Hamburg, 8 vols., 1824-27.

BÜSCHING, *bü'shing*, ANTOINE FRIEDRICH: geographer: 1724, Sep. 27—1793, May 29; b. Stadthagen, principality of Schaumburg-Lippe, Germany. He studied theology at Halle, where he had the friendship of Baumgarten. In 1754, he was appointed extraordinary prof. of philosophy in Göttingen, but soon incurred the displeasure of the Han-

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overian government by his religious heterodoxy, and accepted an invitation, 1761, to St. Petersburg as preacher to a Protestant congregation. In 1765, he returned to Germany, and 1766, was called to Berlin as upper consistorial councilor and director of a *gymnasium* in Berlin, where he died. Until the appearance of B.'s *Erdbeschreibung* (first vol., Hamburg, 1754), neither Germany nor any other nation possessed a geographical work which made any pretension to scientific treatment or completeness of execution. Changes in the political arrangements of the world have deprived the work of its original value, but it has been corrected and edited by subsequent writers. Of his other numerous publications, the most important is the *Magazin für Histoire und Geographie* (25 vols. Hamburg, 1767-93).

BUSEMBAUM, *bó'zém-bowm*, HERMANN: 1600-1668, Jan. 31; b. Nottelen, Westphalia: theologian of the order of Jesuits. About 1640, he taught ethical philosophy at Cologne, and later, was appointed rector of the College of Jesuits at Münster. His work *Medulla Theologiæ Moralis* (1645), was celebrated as a standard authority in the seminaries of the Jesuits, though several of its propositions were condemned by the pope. It has gone through more than 50 editions. It was enlarged by the Jesuit Lacroix (1707), and re-edited, with improvements and additions, by the Jesuit Montausan 1729, and again by Alfonso de Ligorio 1757. As it was found that the work contained doctrine in favor of regicide, it was burned, by order of the parliament of Toulouse, on the occasion of an attempt made on the life of Louis XV. by Damiens, 1757. Subsequently, the Jesuits Zacharia and Franzoja of Padua wrote in defense of B.'s work.

BUSH, n. *búsh* [Icel. *buskr*, a tuft of hair; *buski*, a bunch of twigs: OF. *bousche*, and *bouche*, a tuft, a wisp: Dan. *busk*, a bush: Dut. *bos*, a bunch]: a shrub or small tree; a collection of shrubs of various kinds; in the *colonies*, a tract of uncultivated country covered with trees and shrubs of natural growth; in *fox-hunting*, the name applied to the fox's tail. **BUSH-BEAN**, the kidney bean, or French bean, *Phaseolus vulgaris*. **BUSH-BEATER**, n. *-bēt'ér*, one who beats among the cover to rouse game. **BUSH-FIGHTING**, n. *-fit'ing*, irregular warfare in a woody country. **BUSH'ET**, n. *-ét*, a copse; a wood. **BUSH'MAN**, n. one who lives in the forests or back settlements of a new country (see **BUSH-MEN**). **BUSHY**, a. *búsh'í*, full of bushes; thick like the branches of a bush. **BUSH'INESS**, n. **BUSH'RANGER**, n. a robber, especially an escaped criminal, roaming about the woods and outlying parts of a new country. **BUSH'-WHACKER**, familiar term in the United States during the rebellion for men in some southern states, who under pretense of neutrality were secretly lying in wait to capture or kill stragglers; a person accustomed to beat about or travel through bushes; a raw countryman; a bush-scythe. **BUSH'-WHACKING**, the act of travelling or working one's way through bushes; hauling a boat through the bushes grow-

BUSH—BUSHEL.

ing in the shallow water near the shore. To BEAT THE BUSH, or To BEAT ABOUT THE BUSH, to approach a matter in some indirect or roundabout way.

BUSH, n. *búsh* [Dut. *busse*; Ger. *büchse*; Dan. *bosse*, a box]: a round open piece of metal put into sheaves of blocks to prevent them wearing; a circlet of metal put into a part of a machine to lessen friction: V. to line any hole or orifice with metal. BUSH'ING, imp. BUSHED, pp. *búsh't*, lined with metal.

BUSH ANTELOPE, or BUSH BUCK, or BUSH GOAT: names common to a number of species of Antelope (q.v.), natives chiefly of the s. and w. parts of Africa, forming a section of the genus *Antilope*, which some naturalists have attempted to erect into a distinct genus (*Philatomba* or *Cephalopus*). They are of more compact form, shorter limbs, and greater strength, but much less agility, than the true or typical antelopes. They are remarkable for the arched form of the back. They have short, straight, or slightly curved horns, situated far back, and generally peculiar to the male sex, with usually a long tuft of hair between them. They have no tear-pits, but instead of them, a naked glandular line, formed of two series of pores, on each cheek. They frequent jungles, thick forests, and beds of reeds, and when pursued seek to escape by diving into a thicket. The common or white-backed B. A. of Sierra Leone (*Antilope sylvicultrix*) is about three ft. high at the shoulder; it is a dull, heavy, awkward-looking animal; stays concealed in the thickets during the day, living singly or in pairs, and feeds in the open spaces in the early mornings only. To shoot it, sportsmen place themselves on the margin of woods, and watch their opportunity as it comes out to graze. Its flesh is more esteemed than that of the more agile antelopes. Nearly 20 other species are usually ranked in this section of antelopes, among which is the *Kleene Boc* (*Antilope pygmaea*) of s. Africa, a species abundant in many parts of Cape Colony, of very small size, not more than one ft. in height at the shoulder, and with horns only about $1\frac{1}{2}$ inch in length. It is a timid, gentle animal, easily domesticated. It differs from the typical Bush Antelopes in its great activity.

BUSHEAB, *bó-shê-áb'*: low, flat island in the Persian Gulf, about 11 m. from the Persian coast; lat. $26^{\circ} 50'$ n., long. $53^{\circ} 12'$ e. It is about 18 m. long, narrow, and well peopled, with a town and harbor at its western extremity. Its proper name is *Khoshaub*, signifying 'good water.'

BUSHEL, n. *búsh'el* [OF. *boissel*—from mid. L. *busse'l' lus*, and *bustel' lus*, a bucket, a vessel to measure grain: comp. Gael. *bus-i'all*, a sack tied up at the mouth by a thong—from *bus*, mouth; *i'all*, a thong]: a measure for dry goods, such as grain, fruit, etc.; equal to four pecks. The quarter contains 8 bushels, and the bushel 8 gallons, the gallon measuring 277.274 cubic inches, and holding 10 lbs. avoirdupois of distilled water. Hence the imperial bushel contains 80 lbs. of water, and measures 2218.2 cubic inches,

BUSHIRE—BUSIRIS.

BUSH'ELAGE, n. -āj, a duty on commodities estimated by their bushel bulk.

BUSHIRE': see **ABUSHEHR**.

BUSH'MEN, or **BOSJESMANS**, bōs'jēs-mānz: nomadic race in s. central Africa, especially in the Kalahari desert, where they subsist on game and the desert roots. They call themselves saab, or saan. In appearance the B. are thin and wiry; of low stature, poor and debased when found near the Cape but of improved appearance and intelligence farther north. They do not cultivate the soil, build no huts, and do not gather round a king or chief; at one time numerous, they are now rapidly becoming extinct. In some of the mountain caves which they have inhabited, rude paintings are to be seen showing some artistic talent. Although they resemble the Hottentots (q.v.) in color and features, the relationship is by no means clear. The languages of both abound in curious and unpleasant clicking sounds, but have little or nothing else in common.

BUSHNELL, būsh'nel, HORACE D.D.: 1802, Apr. 14—1876, Feb. 17; b. in Litchfield co., Conn.: theologian. He graduated at Yale Coll. 1827, was for eleven months literary editor of the *New York Journal of Commerce*, taught at Norwich, Conn., and in 1829 returned to Yale as tutor, also studying law and then divinity. He was pastor of the North Cong. Church, Hartford 1833–57, when failing health compelled his resignation. Prominent among his addresses were the Phi Beta Kappa orations at Yale, 1837, on *Principles of National Greatness*, and at Harvard, 1848, on *Work or Play*, with one in New York on the *Fathers of New England*, 1849. His *Christian Nurture* appeared 1847. *God in Christ* (1849), called forth a charge of heresy, of which he was acquitted: the views therein expressed were defended in *Christ in Theology* (1851), which aimed to prove the impossibility of reaching scientific accuracy in religious thought and of formulating it in human language. His later publications were *Sermons for the New Life* (1853); *Nature and the Supernatural* (1858), which has been compared to Butler's *Analogy*; *Character of Jesus*; *Christ and His Salvation* (1864); *The Vicarious Sacrifice* (1865); *Moral Uses of Dark Things* (1868); *Women's Suffrage, the Reform against Nature* (1869); *Forgiveness and Law* (1874). A bold thinker and vigorous writer, he occupied in America a position similar to that of Maurice and F. W. Robertson in England, and contributed more largely than any other Trinitarian to the liberalization of the prevalent orthodoxy. His writings are rich in suggestiveness and spiritual insight. He wrote much for the *New Englander*. Dr. B. declined the presidency of the Univ. of Cal., which he had helped to establish. He died at Hartford.

BUSINESS, **BUSIED**, **BUSILY**: see under **BUSY**.

BUSIRIS, bū-sī'rīs: ancient Egyptian town, presumably built by one of the princes of the same name, in the delta of the Nile, and supposed to be close at the entrance of

BUSK—BUSSAHIR.

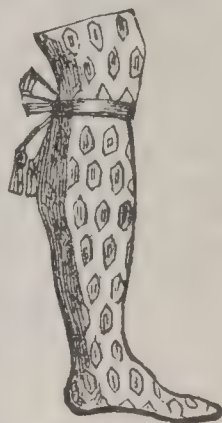
Elysium. Here Isis had a shrine, and the annual festival and lamentation of Osiris was celebrated. The nome or district issued small bronze coins A.D. 117, under a privilege from Hadrian. The town was destroyed by Diocletian; its name is preserved in Abusir.

BUSK, n. *bŭsk* [F. *buse*; OF. *busque*, and *buste*, a buste for stays: OF. *busche*, a log: Icel. *bukr*, the trunk of an animal: Sp. *buche*, stomach, breast]: a thin flat piece of steel, whalebone, or wood, with which a woman's stays or bodice is made stiff in front.

BUSK, v. *bŭsk* [Icel. *bua*, to prepare, to dress; *buast*, to bend one's steps; *bŭask*, to get one's self ready: Gael. *busg*, to dress or adorn]: to direct one's course toward; to make ready; to dress; to attire one's self; to deck. **BUSK'ING**, imp. **BUSKED**, pp. *bŭskt*.

BUSKET, n. *bŭs'kĕt* [F. *bosquet*, a thicket—from mid. L. *boscus*, a little wood]: in *OE.*, a small bush, or sprig of one. **BUSKY**, a. *bŭs'kĭ*, bushy; woody; shaded by trees.

BUSKIN, n. *bŭs'kĭn* [Sp. *borcegui*; It. *borzacchino*, a buskin, a half boot—from Flem. *brosekin*, a buskin of leather: F. *brodequin*, bukskin]: a kind of leather of sheepskin—the Ar. *cherqui*; a kind of a half boot, lacing tight to the leg. The ancient tragedians wore bukskins (*cothurnæ*), often with thick soles, to add to their stature. Hence the B. is often put for Tragedy, as the sock [*soccus*, a flat-soled shoe] for Comedy. **BUS'KINED**, a *-kĭnd*, dressed in buskins.



Buskin.

BUSS, n. *bŭs* [Icel. *bussa*; Dut. *buyse*, a boat: Sp. *bucha*]: a vessel used mostly in the herring-fishery, especially among the Dutch; usually 50 or 60 tons burden.

BUSS, n. *bŭs* [Gael. *bus*, a mouth: Sp. *buz*, a kiss: L. *basium*; It. *bacio*, a kiss: F. *baiser*, to kiss]: a salute with the lips; a rude or playful kiss: V. to kiss in a rude or playful manner. **BUS'SING**, imp. **BUSSED**, pp. *bŭst*.

BUSS, *bŭs*, **FRANZ JOSEPH VON**: 1803, March 23—1878, Feb. 1: publicist. He was prof. of law at Freiburg from 1833, deputy to the Baden parliament 1837–46, and in 1848–49 member of the Frankfort assembly, in which he took a position 'ultra-catholic without being Christian, and reactionary without being conservative.' He put forth three vols. on political science and its history in 1839, and sundry later works on political and ecclesiastical topics.

BUSSAHIR, *bŭs'sâ-hĕr*: (better spelled *Bashahr*): one of the Punjab hill-states, on the lower slopes of the Himalayas (32° n. and 78° e. cross in its area). Much of it is from 7,000 to 12,000 ft. above the sea. The Sutlej flows through the country from e. to w. The dist. on the n. of the Sutlej is called Kunawur, that on the s. is B. proper. The climate in the lower parts on the s. frontier is almost tropical, and there are many genial and fertile districts of

BUSSEY—BUSSU PALM.

mild, temperate climate; other districts are near and within the limits of perpetual snow. The vine thrives in many places, and it is supposed that some parts of this state are extremely suitable for the culture of tea, which, indeed, is cultivated to some extent. Very rich deposits of copper ore have been discovered in Kunawur, and copper-mining is prosecuted near the s.w. frontier. Principal productions are opium, grain, and woolen manufactures. The inhabitants are little advanced in civilization; many in the more n. parts have strongly-marked Mongolian features. Polyandry prevails among them, and the females left unmarried take refuge in Lamaic convents. The rajah and upper classes in the s. parts are Rajpoots, and the people generally are of Hindu race. Their observance of Hinduism, however, is very partial. The Rajah of B. holds his dignity by a grant from the East India Co., made on the expulsion of the Ghoorkas 1815. Area, 3,320 sq. m.; pop. (1881) 64,345; (1891) 90,000.

BUSSEY, *bŭz'ze*, BENJAMIN: 1757, Mar. 1—1842, Jan. 13; b. Canton, Mass. He served in the Revolutionary war 1775–79, became a silversmith at Dedham, and in 1782 a Boston merchant. His estate of \$350,000 was left in reversion to Harvard Univ., one half for the schools of law and divinity, the other half, including several hundred acres at West Roxbury, to found a school of agriculture and horticulture, which was established 1869–70.

BUSSORA, or BASSAH: see BASSORA.



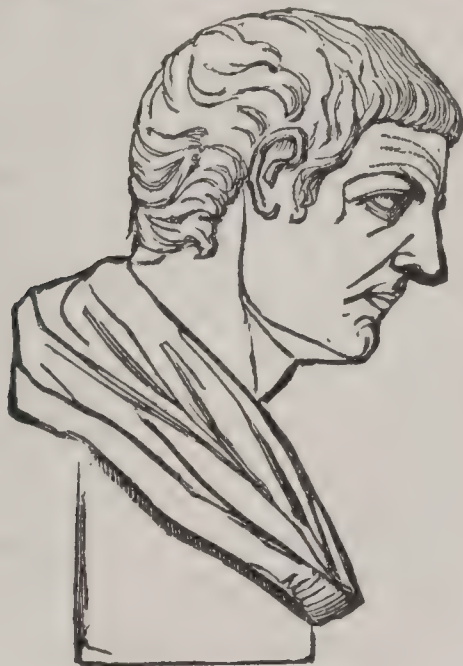
Bussu Palm.

BUSSU PALM, *bós'sô pâm* (*Manicaria saccifera*): S. American palm, growing in the tidal swamps of the Ama-

BUST.

zon, the only known species of its genus. The stem is only 10-15 ft. high, curved or crooked, and deeply ringed. The leaves are simple or undivided, and are the largest of the kind produced by any known palm, being often 30 ft. long, and 4 or 5 ft. wide. They are simply branched, drooping, and the fruit is of an olive color, large, hard, and three-seeded. The leaves make excellent and durable thatch, being split down the midrib, and laid obliquely on the rafters, so that the furrows formed by the veins lie in a nearly vertical direction, and serve as so many little gutters to carry off the water. The spathe, taken off entire, is used by the Indians as a bag, or the larger ones are stretched out to make caps.

BUST, n. *bŭst* [F. *buste*, the body of a man from the face to the middle—from It. *busto*, a trunk without a head—from mid. L. *busta*, a tree stripped of its branches: Icel. *butr*, the trunk of a tree]: the figure of a person showing the head, shoulders, and breast; in plastic art, a sculptural representation of the head and upper part of the human body. The earliest busts formed by the ancients were probably those heads of Mercury which, elevated on tall, square blocks of stone, received the name of *Hermæ* (q.v.).



Bust of Aristotle.

These *hermæ* were afterward frequently surmounted by representations of other divinities, such as Minerva; and as they gradually assumed more and more of the human form they passed into busts, which were made of marble, bronze, etc. But it was not till very late in the history of art that busts, in the sense of portraits of individuals, came to be used, either in Greece or Rome; and it is remarkable that neither Greeks nor Romans designated them by any special name, for the Latin word *bustum* had a quite different meaning. It was not till Alexander's time that busts were used for portraiture in Greece; and most of the Roman busts extant belong to the period of the emperors. During the learned period of Greece.

which commenced with Aristotle, portraits of men of letters formed an important department of art; and it became an object with the founders of museums and libraries to procure complete sets of them. The artists of this period exhibited remarkable ability in expressing the characters of the individuals whom they represented. In this way, we have well authenticated busts of Socrates, Plato, Zeno the Stoic, and other philosophers; of poets and orators, such as Isocrates and Demosthenes, of Athenian statesmen and distinguished women. In Rome representations of the kings, and persons of distinction belonging to the earlier period, were probably made from the *imagines majorum* which every patrician preserved in his atrium, and which were commonly made of wax. These, no doubt, were often merely fanciful representations, partly taken, it may be, from the more prominent features which belonged to the existing members of the family. The earliest well authenticated Roman B. extant, is probably that of Scipio Africanus the Elder. During the empire, busts for the most part were accurate portraits, and still furnish the means of acquaintance with the features of the emperors and of most other persons of distinction. Busts of poets and men of letters are far less frequently met with among the Romans than among the Greeks. The chief marks of the authenticity in these busts are the names frequently inscribed on them, and, where these are not found, the comparison which can be made between them and coins. Private collectors of busts were known in antiquity, as, for example, M. Terentius Varro and Pomponius Atticus. In our own time, King Louis I. of Bavaria made, in his celebrated Valhalla, probably the most remarkable existing collection of busts. The first complete collection of engravings from antique busts was made by Fulvius Ursinius in his *Illustrium Imagines* (Rome, 1569, and Antwerp, 1606). Recently, Visconti's *Iconographie Grecque* (Paris, 1811) and *Iconographie Romaine* (Paris, 1817) supply a similar collection.

BUSTAMANTE, *bós-tá-mán'tā*, ANASTASIO, M.D.: 1782-1851; b. Guadalajara: Mexican patriot. He practiced as a physician at San Luis Potosi, supported the Spanish government at first in the revolution of 1810, but soon espoused the popular cause, became a gen. of division under Iturbide and commander of the interior provinces. He was vice-pres. of the republic at the end of 1829, pres. 1830, Dec.—1832, Aug., and again 1837-41; twice defeated and banished by Santa Anna, and lived in France, England, and Italy; returned in 1845 and filled many offices usefully. He died at San Miguel de Allende. ~

BUSTARD, n. *būs'tərd* [F. *bistard* or *outard*; OF. *oustard*, a great sluggish fowl: L. *avis tarda*, the sluggish bird], (*Otis*): genus of birds, sometimes made the type of a family, *Otidæ*, usually ranked in the order *Grallæ* (q.v.). The general structure seems to agree best with that of the *Grallæ*; but there are points of strong resemblance to gallinaceous birds, both in the appearance and habits of the

BUSTARD.

bustards; while their power of running, and the use which they make of their wings to aid in running, indicate a relation to the *Struthionidae*, or ostrich tribe. They differ, however, from these birds in possessing wings quite capable of flight, although even when pressed by danger they often seek to escape by running, and the great B. of Europe has been pursued and taken by greyhounds.—Bustards are birds of bulky form, with long neck and long naked legs; the toes, three in number, all directed forward, short, united at the base, and edged with membrane; the wings rather rounded; the bill of moderate length, straight, or nearly so. They are mostly inhabitants of open plains, to which all their habits are adapted.—The GREAT B. (*Otis tarda*) was at one time plentiful in some parts of England, and in the s.e. of Scotland; but it is now a very rare British bird. It is common in the s. and e. of Europe, and abounds in the wide steppes of Tatary.



Great Bustard (*Otis tarda*).

Is the largest of European birds, the male sometimes weighing nearly 30 lbs. The female is much smaller than the male. The plumage is of a pale chestnut color on the upper parts, beautifully varied with black—much white and black on the wings, the tail tipped with white. The tail is short, spreading, and rounded. A tuft or plume about seven inches long, springing from the chin, passes backward and downward on each side, in the summer dress of the male, partly concealing a long stripe of bare skin on each side of the neck. The anatomy of the male exhibits a remarkable peculiarity in a large bag or pouch, capable of holding several pints, the entrance to which is between the under-side of the tongue and the lower mandible. The use of this bag is unknown; but it has been conjectured to be

BUSTLE—BUSY.

for conveying water to the females and young, in wide arid plains. The Great B. feeds indiscriminately on animal and vegetable food, swallows frogs, mice, worms, etc., and is very fond of turnip-tops. Its flesh is highly esteemed for its flavor. It is polygamous. No difficulty is found in taming it, but all attempts to reduce it to a state of true domestication have hitherto failed, from its not breeding in the poultry-yard.—The LITTLE B. (*O. tetraz*), frequent in the s. of Europe and n. of Africa, is not half the size of the Great Bustard.—The BLACK-HEADED B. (*O. nigriceps*) is found in large flocks in the open plains of the Mahratta country. Its flesh is esteemed one of the greatest delicacies which India produces.—The KORI B. (*O. Kori*) of s. Africa, a magnificent bird, standing upward of five ft. in height, has a similar reputation as one of the best kinds of game.—Australia possesses a B. (*O. Australasianus*) somewhat exceeding the Great B. of Europe in stature, called wild turkey by the colonists of New South Wales. Its plumage is finely freckled or spotted; the prevailing color is brown. It has become comparatively rare in the more settled districts, its flesh being particularly delicate and well-flavored, but may be seen stalking majestically in the grassy plains, wherever human footsteps are still rare.

BUSTLE, n. *bŭs'sl* [Icel. *bustla*, to make a splash in the water, to bustle; *bustl*, bustle: Gael. *bustail*, puffing, blowing]: hurry and noise; great stir; rapid motion with noise; a pad used by women to expand petticoats and dress, and make them fuller at the back: V. to be very active; to stir quickly with noise. BUSTLING, imp. *bŭs'ling*: ADJ. active; stirring and busy. BUSTLED, pp. *bŭs'sld*. BUSTLER, n. *-lër*, one who.—SYN. of 'bustle, n.': hurry; haste; dispatch; speed; tumult; uproar.

BUSTO-ARSIIZIO, *bŭs'tŏ-är-sēd'zē-ŏ*: town of n. Italy province of Milan, 20 m. n.w. from Milan. It is a place of active trade, and has a cotton-thread factory. Pop. 10,000.

BUSY, a. *bŭz'ŭ* [AS. *biseg*, occupation: Dut. *besig*, busy: F. *besogne*; OF. *besoigne*, business, work: Gael. *beosach*, active—from *beo*, alive]: active and lively; very closely engaged in mental or physical work; constantly and actively employed; meddling; troublesome: V. to employ constantly; to keep employed; to make busy. BUS'YING, imp. *-ŭ-ing*. BUSIED, pp. *-bŭz'id*. BUS'ILY, ad. *-ŭ-lŭ*, in a busy manner; with an earnest business air. BUSINESS, n. *bŭz'nēs* [OF. *busoignes*, plu. works, business]: employment; occupation; anything that demands attention; affairs: matter under consideration; something to be done; right or claim. BUSINESS-LIKE, a. as it ought to be done; thorough. BUSY-BODY, n. *-bŭd'ŭ*, a meddling person. BUSY-MINDED, a. having an active mind. TO MAKE A THING ONE'S BUSINESS, to occupy one's time wholly or chiefly with it.—SYN. of 'business': occupation; employment; engagement; avocation; trade; profession; art; office; duty; affairs; concern; matter; calling.

BUT—BUTCHERS' BROOM.

BUT, conj. *büt* [AS. *butan*; Dut. *buitan*, without: contraction of Eng. *be-out*]: something more to supply; unless; yet; nevertheless; than; otherwise than: AD. only: PREP. except: INT. expressing surprise or dissent: N. the outer room of a house of two apartments where the inner room is entered from the outer. **BUT AND BEN** [AS. *butan*, without; *binnan*, within]: without the house and within; in *Scot.*, applied to the outer and inner rooms of a house of two apartments.

BUTCHER, n. *bûch'ér* [F. *boucher*; OF. *bocher*, originally one who slaughters he-goats—from *boc*, a goat: It. *beccaro*—from *becco*, a goat—*lit.*, a slaughterer of bucks or goats, goats' flesh forming a common flesh-meat in former times]: one who slaughters animals for food; one who cuts up and sells meat or flesh; a cruel man; one who delights in blood: V. to kill or slaughter animals for food; to murder with unusual cruelty. **BUTCH'ERING**, imp. **BUTCH'ERED**, pp. *-èrd*. **BUTCH'ERY**, n. *-ér-ì*, great slaughter; murder with great barbarity; place where animals are slaughtered. **BUTCH'ERLY**, ad. *-lì*. **BUTCH'ERLINESS**, n. **BUTCHER-MEAT**, n. the flesh of animals slaughtered for the table. **BUTCHER'S-BROOM**, n. the plant knee-holly, the branches of which are used by butchers for brooms; the *Ruscus aculeatus*, ord. *Liliacæ*. **BUTCHER-BIRD**, the shrike, a bird which kills and impales insects and smaller birds, on thorns and the like (see **SHRIKE**).—**SYN.** of 'butchery': massacre; carnage; slaughter; murder.

BUTCHERS' BROOM (*Ruscus*): genus of plants of the nat. ord. *Liliacæ*, with male and female flowers on sepa-



Butchers' Broom (*Ruscus aculeatus*).

a, branch, with flowers; *b*, a berry; *c*, a seed; *d*, a female flower.

rate plants, a perianth of six leaves, filaments united, one style, and the fruit a berry. The common B. B. (*R. aculeatus*) is a shrubby, or almost shrubby evergreen plant, with

BUTE—BUTEA.

a biennial stem, 1-3 ft. high, sending out many short branches and ovate alternate sharp-pointed false leaves of the same substance as the branches, the flowers minute and arising from the disk of the false leaves, solitary; the berries red, almost as large as wild-cherries, and of a sweetish taste. It is common in many parts of the s. of Europe, and in the s. of England in woods and hedges. The English name is derived from the use made of the plant by butchers, to sweep their blocks. It grows well under trees or shrubs, and can often be advantageously introduced for ornamental purposes. The root was formerly much used in medicine. It is aperient and diuretic.—*R. hypophyllum*, native of Italy, had formerly considerable reputation as a stimulant of the uterus.

BUTE, *būt*: island in the Firth of Clyde, Scotland, separated from the coast of Argyle by a narrow, winding strait, called the Kyles of Bute, mostly less than a mile wide; about 6 m. from the w. coast of Ayrshire, and 8 m. n. of Arran. It is about 16 m. long, of irregular breadth; area 60 sq. m. The surface to the n. is high, rugged, and barren; in the centre and s., it is low and undulating, and comparatively fertile. The highest point rises 875 ft. The coast is rocky, and has some bays. The island has several small lakes. The climate is milder than in any other part of Scotland, and though moist, less so than on the w. coast generally; hence it is much resorted to by invalids. In the s. the soil is sandy; toward the n. clay predominates. Most of the arable land is under tillage, and agriculture is in a good state; chief crops are oats, turnips, and potatoes. The principal town is Rothesay. Most of the island belongs to the Marquis of Bute, whose beautiful seat, Mount Stuart, is about 4 m. s. from Rothesay. Among the antiquities of B. are Rothesay Castle, Kames Castle, Kilmorie Castle, St. Blaine's Chapel, Dungyle, a remarkable vitrified fort on a high crag on the s.w. coast, and the Devil's Caldron, a circular erection, the original purpose of which is not known. B. and the neighboring isles were for many centuries subject to the Norwegians. Pop. 10,998.

BUTE, JOHN STUART, third Earl of: 1713-92. About 1737, he attracted the favorable notice of Frederick Prince of Wales, who made him one of his lords of the bedchamber. After the death of the prince, he became groom of the stole to his son, afterward George III., over whose mind he obtained strong influence. In 1761, Mar., he was appointed one of the principal secretaries of state; and 1762, May 29-1763, April 8, he was prime minister. His government is memorable only as one of the most unpopular that ever held office in Britain, its fundamental principle being the supremacy of the royal prerogative, of which the executive government were merely the humble servants. Lord B. was given to scientific pursuits, especially botany, and showed himself a liberal patron of literature and art. He married the only daughter of Lady Mary Wortley Montagu.

BUTEA, *bū'tē-a*: genus of plants of the nat. ord. *Legu-*

BUT-END—BUTLER.

minosæ, sub-ord. *Papilionaceæ*, remarkable for the great length of the *standard* of the flower, and having a compressed one-seeded pod, membranaceous at the apex. The best-known species are *B. frondosa* and *B. superba*, natives of India; the former very widely diffused through that country, generally appearing as a sort of shrub in the neighborhood of villages, but in the jungles growing into a small tree. These trees present a gorgeous sight when covered with racemes of large, deep scarlet flowers. They have trifoliate leaves, with roundish leaflets, velvety beneath. They yield a resinous exudation, in the form of lurid red tears, often covering the twigs, which is one of the kinds of Lac (q.v.) brought to the market in India. The juice of the tree is not red, and the lac is supposed to be elaborated by insects, but of what species is unknown.—*B. frondosa* is called the *Dhak* tree in India. The bark and roots are very fibrous, and the fibre is used for calking boats. The flowers, called *Teesoo* or *Keesoo*, yield a beautiful yellow or orange dye.

BUT-END, n. *büt'ènd*: the blunt or larger end: see under **BUTT**.

BUTERA, *bó-tā'rá*: town of Sicily, province of Caltanissetta, 8 m. n.n.w. from Terranova; on a height on the left bank of the Manfria. In 853, B. was besieged for five months by the Saracens. It was almost the last town in Sicily taken by the Normans (in 1089). Pop. 5,350.

BUTESHIRE: county in the s.w. of Scotland, comprising the isles of Bute (q.v.) and Arran (q.v.), and the Cumbræ, Holy Isle, Pladda, Inchmarnoch, and other smaller islands; 225 sq. m., or 143,977 statute acres. B. returns one member to parliament. The county town is Rothesay, in the island of Bute. Pop. of county (1871) 16,977; (1881) 17,657; (1891) 18,408.

BUTLER, n. *büt'lér* [F. *bouteillier*—from *bouteille*, a bottle: Norm. F. *butuiller*—from *butuille*, a bottle—from mid. L. *butic'ula*, a small bottle or flagon: Sp. *boteria*, the store of barrels (see **BUTT** 2)]: the servant or official in charge of the buttery or collection of casks; a servant in wealthy families who has the charge of the plate, liquors, etc. **BUTLERAGE**, n. *-lér-áj*, very ancient hereditary duty belonging to the crown, otherwise called the *prisage* of wines; taken notice of in the Great Roll of the Exchequer in the time of Richard I., still extant. Under this right the crown could take two tuns of wine from every ship (English or foreign) importing into England 20 tuns or more, one before, and one behind the mast; which, by charter of Edward I., was exchanged into a duty of two shillings for every tun imported by merchant strangers, and called butlerage, because paid to the king's butler. **BUTLERSHIP**, n. the office of butler.

BUTLER. ALBAN: 1710–1773, May 15; b. Appletree, Northampton; Rom. Cath. writer. He was educated at Douai, and became prof. there. He was for some time chaplain to the Duke of Norfolk. When he died, he was head of the English College at St. Omer. His great work is the *Lives of the Fathers, Martyrs, and other Principal*

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Saints (5 vols., 4to; Paris 1745); often republished, one edition being edited by B.'s nephew, CHARLES BUTLER) 1750-1832), known as a lawyer and a voluminous author on legal and theological subjects.

BUTLER, *but'ler*, BENJAMIN FRANKLIN: 1795, Dec. 15-1858, Nov. 8; b. Kinderhook, N. Y.; descendant of Oliver Cromwell. He was Martin Van Buren's law student and partner 1817-21; dist. attorney of Albany co. 1821-25; a reviser of N. Y. statutes, member of assembly, U. S. attorney-gen. 1831-34; acting sec. of war 1836, Oct.—1837, Mar.; U. S. dist. attorney for s. dist. of N. Y. 1838-41; a founder of Univ. of City of New York, and law prof. there. The Kansas-Nebraska Bill drove him from the democratic party. He died in Paris, France; his life was written by W. L. Mackenzie.

BUTLER, BENJAMIN FRANKLIN, LL.D.: 1818, Nov. 5—1893, Jan. 11; b. Deertfield, N. H.; lawyer. He graduated at Waterville Coll. (Colby Univ.), Me., 1838; was admitted to the bar 1840; and began practicing in Lowell, Mass., in the following year, rapidly gaining distinction as a criminal lawyer. An inherited taste for military life led him to join the state militia as a private early in his career, and he was promoted through the various grades to the rank of brig.gen. He also entered political life as a democrat. In 1853 he was elected a state representative and member of the state constitutional convention, and 1859 a state senator. In 1860 he was chosen a member of the democratic national convention which first met at Charleston, and with a majority of the delegates from Mass. withdrew from the adjourned session at Baltimore, mainly because the African slave-trade had been approvingly advocated there. The same year he was an unsuccessful candidate for gov. Two days after Pres. Lincoln's first call for troops (1861, Apr. 15) he took possession of Annapolis with a part of his militia brigade, another part having garrisoned Fortress Monroe the day previous, thus with his own brigade, aided by the 7th regt. of N. Y. militia, preventing the seizure of the national capital and of Fortress Monroe by the rebels. Having re-established railroad communication with Washington *via* Annapolis, and placed the 7th N. Y. and the 8th Mass. regts. in the former city, he took possession of Baltimore without opposition May 13. For his prompt and effective movements Pres. Lincoln commissioned him maj.gen. of vols., May 16, and assigned him to the command of Fortress Monroe and the dept. of e. Va. While there a large number of fugitive slaves, who had been working in Confederate earthworks, came within his lines, and when their masters claimed them as property he declared: 'This property is useful to the enemy in war, *ergo*, contraband,' and refused to give them up. He captured Forts Hatteras and Clark, N. C., Aug.; recruited in Mass. an expedition for operations in the Gulf of Mexico and the Mississippi river; made a landing on Ship Island 1862, Mar. 23; went up the Mississippi Apr. 17; and, after David G. Farragut (q.v.) had virtually captured New Orleans, Apr.

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24, took possession of the city May 1. He remained in command till Dec. 16 following, instituting and enforcing beneficial sanitary measures, compelling rich rebels to help support the poor, arming free negroes, hanging William Mulford for hauling down the U. S. flag on the mint, issuing a celebrated order (No. 28) aiming to repress the exuberant disloyalty of some women and to protect officers and soldiers from insults which they could not resent, and being proclaimed an outlaw by Jefferson Davis. In 1863, Nov., he was placed in command of the dept. of Va. and N. C.; 1864, Nov., was sent to New York to preserve order during the election; the next month conducted an expedition against Fort Fisher, near Wilmington, N. C., which failed through lack of proper naval co-operation; and was soon afterward removed by Gen. Grant. He resigned his commission; returned home; was member of congress as a republican 1866-75 and 1877-79; was a manager on the part of the house of representatives in the impeachment of Pres. Johnson 1868; was defeated for gov. as a republican 1871 and as a greenbacker 1878-9; elected as a democrat 1882; defeated for re-election 1883; and as the greenback and anti-monopoly candidate for pres. of the United States received 133,825 votes 1884. While gov. he preferred sensational charges against the management of the Tewksbury almshouse, which a legislative investigating committee pronounced unsustained; and Harvard Univ. withheld from him the honorary degree of LL.D., which it customarily bestows on each gov. of Mass. In 1889, May, in delivering a eulogy on Admiral Farragut in Boston, B. spoke of 'his brave officers, all save one, a high officer who ran away,' and a few days afterward acknowledged that the officer he meant was Admiral David D. Porter (q.v.). This revival of B.'s frequently repeated charges of cowardice against Porter at New Orleans aroused the indignation of the latter's friends, and for several weeks the newspapers contained sprightly correspondences and interviews in which the principals and their friends sought to vindicate the integrity of each other from mutual charges. B. received the degree LL.D. from Williams College 1863, and published *Butler's Book* (Boston 1892).

BUTLER, ELIZABETH SOUTHERDEN (THOMPSON): painter: b. Lausanne, Switzerland, about 1843. She accompanied her parents to Prestbury, England; began to handle the pencil when five years old; studied drawing at home and in Florence; entered the S. Kensington School of Art when fifteen years old; completed her studies in oil and water colors in Florence; and made her first exhibition, *Bavarian Artillery Going into Action*, in the Dudley Gallery, London. In 1870 the family returned to England; 1873 her battle-piece *Missing* was exhibited at the Royal Acad.; and 1874 her most famous picture, *Roll call*, was similarly exhibited and subsequently purchased by Queen Victoria. Ruskin greatly praised her *Quatre Bras* (1875), and her chief pictures since are *Balaklava* (1876); *Inkermann* (1877); *Listed* (1878); *Floreat Etona*; and

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Charge of the Scots Greys at Waterloo (1882).—Her husband, WILLIAM FRANCIS B., soldier, b. Tipperary, Ireland, 1838, educated in Dublin, was appointed ensign of the 69th regt. 1858, lieut. 1863, capt. 1872, maj. 1874, and dep. adjt.q.m.gen., headquarters staff, 1876; served on the Red river expedition, on a special mission to the Saskatchewan territories 1870–71; and commanded the W. Akim native forces on the Ashantee expedition 1873. He was frequently mentioned in dispatches by Sir Garnet Wolseley and in the house of lords by the commander-in-chief; was appointed commander of the Bath 1874; married Elizabeth S. Thompson 1877, June 11; was appointed staff officer at Natal, s. Africa, 1879; and on the return of the British expedition from the Soudan was appointed commander of the British advanced posts in that country.

BUTLER, *büt'ler*, JOSEPH, Bishop of Durham, England: 1692–1752, June 16; b. Wantage, Berkshire, where his father kept a shop. With a view to the ministry of the Presb. Church, he attended a dissenting acad. at Tewkesbury, Gloucestershire. At the age of 22, he gave proof of high metaphysical ability in a letter to Dr. Samuel Clarke, usually appended to that celebrated writer's *a-priori* demonstration, to which it offers some objections. About this time he made up his mind to join the Church of England, and 1714, Mar., entered Oriel College, Oxford. Soon afterward he took orders. In 1718, he was appointed preacher at the Rolls Chapel, where he preached those remarkable sermons which he published in 1726. The first three, *On Human Nature*, constitute one of the most important contributions ever made to moral science. The scope of the reasoning is, briefly, that virtue is consonant with, and vice a violation of, man's nature. In 1725, B. was presented to the rich benefice of Stanhope, in the county of Durham, to which he removed in the following year. Here he resided in great retirement till 1733. His friend Secker, the archbishop, desired to see him promoted to some more important position, and mentioned his name once to Queen Caroline. The queen thought he had been dead, and asked Abp. Blackburne if it were not so. 'No madam,' said the abp.; 'but he is buried.' In 1733, B. became chaplain to his friend Lord Chancellor Talbot, and at the same time a prebendary of Rochester. In 1736, he published the great work of which the germs were contained in his three sermons, and which has entitled him, in the eyes of his eloquent disciple Chalmers, to be called 'the Bacon of theology.' The leading aim of the *Analogy* is to show that all the objections to revealed religion are equally applicable to the whole constitution of nature, and that the general analogy between the principles of divine government, as revealed in the Scriptures, and those manifested in the course of nature, warrants the conclusion that they have one Author. Soon after the publication of this work, B. was appointed clerk of the closet to the queen, who greatly prized his conversation. In 1738, he was made Bp. of Bristol; in 1740, Dean of St. Paul's; and in 1750, he was translated to the see of Durham. He lived only to make

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one visitation of his diocese. His 'charge' on the occasion, in which he pointed out, with characteristic depth of insight, the importance of a due maintenance of the externals of religion, as a means of keeping alive the thought of it in the minds of the people, subjected him to much censure as betraying a tendency to Roman Catholicism—a charge not now deemed worthy of serious notice. B.'s private character was that of a Christian; grave and judicious, he was at the same time meek and generous. His intercourse with his clergy and people was frank and humane; his episcopal treasures were wisely and munificently distributed, as not his own, and no anxious legatee looked with hope to his death. He d. at Bath, and his remains were buried in Bristol Cathedral. His works, notwithstanding a dry and uninteresting style, have gone through numerous editions. The best is that edited with a life, etc., by Fitzgerald.

BUTLER, MATTHEW CALBRAITH: an Amer. military officer; b. Mar. 8, near Greenville, S. C.; received a classical education at the Edgefield Academy, and 1854, Oct., entered the South Carolina College; left that institution before graduating and studied law in Stonelands, near Edgefield Court house; was admitted to the bar 1857, Dec. He began practice in Edgefield Court house, and in 1860 was elected to the Legislature of South Carolina. After the civil war broke out he joined the Confederate army as captain of cavalry in the Hampton Legion; was promoted through the regular grades to be major-general. In the battle of Brandy Station, 1863, June 9, he lost his right leg. In 1866 he was re-elected to the South Carolina Legislature; in 1870 was candidate for Lieutenant-Governor; and in 1877-95 he held a seat in the U. S. Senate. He was commissioned a Major-General of Volunteers for the war with Spain, 1898, May 28; and was one of the U. S. commissioners to supervise the evacuation of Cuba.

BUTLER, NICHOLAS MURRAY: an American educator; b. 1862, Apr. 2, in Elizabeth, N. J.; was graduated at Columbia University 1882, and studied in Berlin and Paris 1884-5. Returning to the U. S. he was made an assistant in Philosophy in Columbia; was Instructor 1886-9; adjunct professor, 1889-90; and in the latter year became dean of the faculty of philosophy. He was elected president of the university, 1902, to succeed Seth Low, who retired on his election to the mayoralty of New York city. Dr. Butler founded the New York College for training of teachers.

BUTLER, SAMUEL: 1612-80; b. Strensham, Worcestershire, England: poet. His father was a farmer in that place, and said to be a person of some education. Young B., after acquiring the rudiments of his education at home, was placed at the college school at Worcester. His progress was rapid, and he proceeded to one of the universities. After finishing his education, he was appointed

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clerk to T. Jeffreys, Esq., justice of the peace, and in his leisure hours applied himself to the study of music and poetry. He afterward entered the household of the Countess of Kent, which he left, and went to live with Sir Samuel Luke in the same county. After the king's restoration, he was made sec. to the Earl of Carberry, which office he held till 1661. About this time, B. married a Mrs. Herbert, a lady of good family and some property, which, however, was afterward lost by bad investments. He published the first part of *Hudibras* 1663, and its reception at court was immediate and triumphant. It received all the favor Charles could spare from his spaniels and his mistresses, and he deigned even to garnish his royal conversation with its wit. The courtiers took up the fashion, the coffee-houses and taverns followed, and finally the mob went into raptures, in imitation of its betters. *Hudibras* was pirated within four weeks of its publication. The king had wit enough to see the merit of the work, but he lacked generosity to relieve the necessities of the writer. There seems no reason to believe that B.'s palm ever tingled to the touch of royal pension or gratuity. Poverty is almost the only thing in B.'s life that one is certain of. In 1664, he published the second part of his book, and a third part appeared 1678. He died in Rose Street, Covent Garden, and while some say that he starved from pride, all agree that at his death he was very poor.

Hudibras is a kind of metrical *Don Quixote*; and if the work of Cervantes stands at the head of its class in the literature of Spain, *Hudibras* occupies the same place in the literature of England. The Puritans are the subjects of B.'s derision, and King Charles must have felt that the poet avenged for him the battle of Worcester. The weight, compression, and plenteousness of the wit is wonderful. *Hudibras* is like a mass of crystals; every point flashes. It is beyond any other book, of wit 'all compact.' B. thinks in witty couplets, he argues in them, he spears his foes with a jest, he routs and chases them into oblivion with unextinguishable laughter. His best things have become proverbs. His mass of wit has been grated down into common speech; particles of it may be found any day glittering in the talk of English plowmen and artisans.

BUTLER—BUTOMUS.

BUTLER, WILLIAM ALLEN: an American author; 1825, Feb. 20—1902, Sept. 9; b. in Albany, N. Y.; son of Benjamin F. Butler, who served as attorney-general of the U. S. in the cabinets of Andrew Jackson and Martin Van Buren. He was graduated at the New York University 1843; then studied law with his father, and after being admitted to the bar, established a practice in New York city. He wrote *Nothing to Wear* (a satirical poem); *Mrs. Lumber's Raffle*; *Oberammergau*, etc.

BUTLER, WILLIAM ARCHER: 1814–48; b. Annerville, near Clonmel, Ireland: religious and philosophical writer. He was originally a Rom. Catholic, but subsequently became a Protestant, and studied at Trinity College, Dublin where he was appointed prof. of moral philosophy 1837. The principal work on which his reputation is based, is the *Lectures on the History of Ancient Philosophy*, edited with notes by W. Hepworth Thomson (Cambridge, 1856, 2 vols.); remarkable for great learning, eloquence, and depth of judgment. Besides his lectures, there have appeared, *Sermons*, with a memoir by the Rev. Thomas Woodward (Dublin, 1849); *Letters on the Development of Christian Doctrine* (Dublin, 1850); *Letters on Romanism* (Lond. 1854).

BUTMENT: see **ABUTMENT**.

BUTMENT-CHEEK, n. *büt'měnt-chēk*: the part of a mortised timber surrounding the mortise, and against which the shoulders of the tenon bear.



Flowering Rush (*Butomus umbellatus*).

BUTOMUS, *bū'tō-mus*: genus of aquatic plants, of which one species, *B. umbellatus*, is frequent in ditches and

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ponds in many parts of Europe. It is popularly called Flowering Rush, and is one of the plants to which the praise has been assigned of being the most beautiful in the British flora. The leaves are all radical, 2-3 ft. long, linear, triangular, their sharp edges sometimes cutting the mouths of cattle, whence the generic name (Gr. *ox-cutting*). The scape, or flowering stem, is longer than the leaves, terminating in a large umbel of rose-colored flowers, readily distinguished from those of all other British plants by having nine stamens, six in an outer, and three in an inner row.

BUTT, *v.* *büt* [Dut. *botten*; F. *bouter*; OF. *boter*, to push, to thrust: It. *botto*, a blow: Gael. *butadh*, a push, a thrust]: to strike with the head like a goat or a ram; to touch at the end [F. *buter*]: N.—*lit.*, that part of a body which pushes or touches first; a push or thrust given by an animal with its head. BUTTING, *imp.* BUTTED, *pp.* BUTT-HINGE, or BUT-HINGE, a hinge formed of two plates and interlocking projecting pieces which are connected by a pintle. BUTT JOINT, a joint in which the pieces come square against each other, endwise. In iron-work the parts are welded, and the term is used in contradistinction to a lap-joint or weld. BUTT-WELD, a weld in which the edges are square-buttet and jammed against each other, and then welded; a jump-weld. TO COME FULL BUTT AGAINST, to come upon suddenly, so as to make a sounding blow. BUTT-END OF A THING [Icel. *butr*, the trunk: F. *bout*, end: W. *pwt*, a stump: Ger. *butt*, a short thick thing]: the striking or thick end of a thing; the thick end, as of a plank in a ship; the thick end of a rifle, a fishing-rod, etc. BUTT, *n.* a mound of turf in a field to support a target for shooting at; the prick in the middle of a target [F. *but*]; the object of aim. BUTTS, *n.* strips at the edges of a plowed field; hides; the places where targets are erected; a musketry or rifle range. BUTLANDS, waste ground. BUTT AND BUTT, joining end to end without overlapping. ABUT, *v.* to *butt* on or touch at the end. TO MAKE A BUTT OF A PERSON, to make him a mark for the jests of the company.

BUTT, *n.* *büt* [F. *botte*; OF. *boute*, a butt, a leather bottle, a boot: mod. Gr. *boutis*, a cask: Sp. *botu*, a wine-skin—*lit.*, the entire skin of an animal in the form of a bag]: a wooden receptacle for liquors; a large barrel; a *butt* of wine contains 126 gallons; a *butt* of beer, 108 gallons.

BUTT, *büt*, ISAAC: 1813-80 (or '78) b. Glenfin, co. Donegal, Ireland. He graduated at Trinity Coll., Dublin, 1835, became Whately prof. of political economy there 1836, and was called to the bar 1840. He opposed O'Connell in 1843, but defended Smith O'Brien and others in the state trials of 1848, and several Fenians in 1865. He sat in parliament for Harwich 1850-52, for Youghal 1852-65, was returned for Limerick 1871 as a home-ruler, and was long a leader of that party. His *Chapters of College Romance* appeared in the *Dublin Univ. Mag.*, which for a time he edited. He wrote also a *History of the Kingdom of Italy*, 1860, and a *Treatise on the New Law of Compensation to Tenants in Ireland*, 1870,

BUTTE—BUTTER.

BUTTE, n. *büt* [F. *butte*, a small rising ground—from OF. *bute*, the fem. of *but*, an aim, a mark]: in the western parts of North America, detached hills and ridges which rise abruptly, intermediate in height between hills and mountains; applied sometimes to mountains, as to the Downieville Buttes, Cal., almost 9,000 ft. high. *Note*.—The preceding three entries are etymologically connected.

BUTTER, n. *büt'ter* [Bav. *buttern*, to shake backward and forward: Dut. *boter*, butter; *boteren*, to make butter: L. *butyrum*; Gr. *bouturon*, butter—from Gr. *bous*, a cow; *tūrōs*, cheese]: an oily or fatty substance got from milk or cream by churning or shaking it; in *chem.*, sometimes applied to substances resembling butter: V. to cover or spread with butter, as bread. **BUTTERING**, imp. **BUTTERED**, pp. *-tērd*. **BUTTER-BEAT**, a table article for holding melted butter. **BUTTERINE**, or **BUTTERIN**, n. *büt'er-in*, a substitute for butter, first manufactured in France, now extensively produced in Holland and America. It is composed of **OLEOMARGARINE** (q.v.), amalgamated with milk, to which is sometimes added a small proportion of real butter. **BUTTERMILK**, n. the milk left after the butter has been separated. **BUTTERY**, a. *-tēr-i*, like butter. **BUTTER-BUR**, a plant having large leaves and pinkish flowers; the *Petasitis vulgāris*, ord. *Compositæ*. **BUTTERCUPS**, n. plu. bright yellow wild flowers in the form of a cup—so named from their color; a popular but indefinite name of various species of *Ranūn'culus* (q.v.), especially *R. ācris*, *R. repēns*, and *R. bulbōsus*, ord. *Ranūn'culācæ*. **BUTTERFLY**, n. [old Dut. *boterschijte*—from the rēsemblance of the excrement of certain species to butter]: a common insect with large wings, so called from the color of a yellow species; any of the diurnal *Lepidopt'era*. **BUTTERFLY-SHELL**, any shell of the genus *Voluta*. **BUTTERFLY-VALVE**, a double clack-valve, each leaf of which is hinged to a bar crossing the passage-way. There are butterfly pump-valves and butterfly throttle-valves. **BUTTERMAN**, n. a vendor of butter. **BUTTER-TREE**, a tree whose seeds yield a substance closely resembling butter; the *Bassia butyrācia* of India, or *B. Parkiā* of Africa, also *Shēā* butter-tree, ord. *Sapotācææ*. **BUTTER-WORTS**, wild marsh plants, the genus *Pinguic'ulā*, ord. *Lentib'ulācææ*.

BUTTER, *büt'ter*: fatty substance present in the milk of the mammalia, and capable of being extracted from it. In ancient times the Hebrews seem to have made copious use of butter as food; but the Greeks and the Romans used it only as an ointment in their baths, and it is probable that the Greeks obtained their knowledge of the substance from the Scythians, Thracians, and Phrygians, while the Romans obtained it from Germany. In s. Europe, at the present time, B. is very sparingly used; and in Italy, Spain, Portugal, and s. France, it is sold by apothecaries as a medicinal agent for external application. The amount of B. in cows' milk (q.v.) is about 4 per cent., though the kind of pasture, quantity of milk, and general condition influence the relative quantity of the several ingredients of milk. In the

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extraction of B., the milk is allowed to cool, and the cream which rises to the surface is skimmed off, and put into a large, deep, earthenware vessel, where it lies for several days till enough has been collected for a *churning*. (For swifter methods of obtaining the cream by separators, see DAIRY). Difference in treatment makes difference in butter. The B. and cream of Devonshire, England, long famed for superior richness, owe this in greater part to the mode of manipulating the milk, and not to the special character of that fluid, or to the richness of the pastures in those districts. The milk in Devonshire is not allowed to cool slowly, as elsewhere, but is at once placed in large deep pans, and carefully heated. A scum quickly rises, which is pushed to the side; and whenever the bubbles of steam appear the milk is removed and allowed to cool in the ordinary way, when a good deal of the milk thickens to the consistence of B. and is skimmed off as the celebrated *Devonshire clouted cream*. In England, the B. of Epping and Cambridge is highly esteemed; the Dutch B. in a salted form, is very largely consumed; of one-third of the foreign B. consumed in Great Britain, the largest supply is imported from Holland. France stands next, then Denmark and the United States.

In order to separate the B. from milk recourse is always had to the process of agitation in CHURNS (q.v.). The principle involved in all forms of this apparatus is the thorough agitation of the contents, so as to cause the rupture of the minute fat globules present in the milk, and the incorporation or kneading of these ruptured fat globules into larger or smaller masses of butter. The cream is strained through cloth into the churn, to remove any foreign matter; and the agitators being set in motion, the friction of the movement, combined with the admission of air, and the chemical changes that it induces, raises the temperature of the whole contents. At one time, it was thought that one great object of the agitation was the admission of the oxygen of the air, which, becoming thoroughly incorporated with constituents of the milk, combined therewith, and, as a consequence, led to the separation of the butter. It is found, however, that B. can be obtained from milk by mere agitation, without the admission of the oxygen of the air. At the same time, in the ordinary way of churning, oxygen does act a subordinate part by combining with the sugar of the milk, and forming lactic acid, which in its turn *sours* the milk and separates therefrom the caseine (q.v.)—cheese-matter—in minute clots or flakes, yielding what is commonly called *sour* or *butter-milk*. The process of churning must be conducted at a medium rate. If too quickly performed, the B. is soft and frothy, and is said to be *burst*, while, when too slowly made, it is highly tenacious, strong tasted, and badly flavored. When all the B. has *come*, which is known by the particles agglutinating into irregular masses, the B. is *made* by taking the lumps, and well washing and kneading them on a wooden board in a tub of pure spring-water till all the buttermilk has been expressed; it is then divided

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into the requisite size of lumps, fashioned into rolls, or molded into forms, and often stamped with some device. In the making up of the B., the hands of the operator must be scrupulously clean, and be free from the slightest taint of soap. Persons who are subject to moist hands should never knead B., as it is very liable to be contaminated by the slightest foreign matter, especially animal secretions; and it is better always for the operator to wash the hands with water containing some oatmeal before commencing. So important is this source of contamination regarded in milk factories, that every endeavor is made to avoid using manual labor in working the B., and *butter-workers* are commonly used. When newly prepared, the B. is called *fresh* or *sweet* B., and is of a yellow color, which is deeper as the pasture on which the cows have been fed is richer, and hence the poorer kinds of B. are often artificially colored with Arnatto (q.v.).

A large quantity of the B. sent into market has more or less common salt added, for the purpose of preserving it. For use within a week or two, the proportion of common salt employed is about half an ounce to two pounds of B., though, where it has to be kept for some time, as much as one ounce of salt to one pound of B. is used. The incorporation requires to be carefully and dexterously done, so that the resulting material may be uniform; and the better plan is to add only a portion of the salt at a time, and to knead and reknead the B. till the whole is thoroughly mixed. When the less amount of salt has been employed, the result is *powdered* B., and the larger quantity yields *salt* butter. Much of the latter is closely packed in small wooden firkins or *kits*, and occasionally in stone-ware, and sent into market. Great care must be taken to have these kits, and indeed to have every vessel used in the preparation, as clean or *sweet* as possible. Constant rinsing with cold water, and scaldings with boiling water, are resorted to. Attention must likewise be given to the air of the apartments in which the operations are carried on, as tainted air is very injurious.

The adulterations liable to be present in B. are an undue proportion of salt and water, and these run up occasionally to upward of 33 per cent. or one-third of the total weight. Another adulteration is the presence of lactate of zinc, derived from the milk being placed in zinc pails and basins, from the impression that by some imaginary electrical influence an increase in the amount of cream will be the result; but though this is not attained, yet the milk tending to form lactic acid, the latter attacks the zinc vessel and forms lactate of zinc, which dissolves in the milk, and thereby contaminates it, imparting an unpleasant taste, and, when present in larger quantity, leading to violent spasmodic vomiting. When B. is allowed to get old, it becomes rancid, and tastes and smells disagreeably. To some extent an acid is formed called Butyric Acid (q.v.). For the use of B. in diet, see FOOD and NUTRITION.

BUTTER, in Chemistry: generically any substance of

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the consistence of B.—Thus it is used to designate palm, cocoanut, shea, and nutmeg oils. It is applied also to certain metallic substances which have an oily aspect and consistence resembling melted B.; thus we have B. of antimony, bismuth, zinc, and tin.—B. of Antimony is a thick, dense, oily compound, produced by acting upon the native sulphuret of antimony (SbS_3) by concentrated hydrochloric acid (HCl) and heat, when the oily chloride of antimony (SbCl_3) is formed: see ANTIMONY.

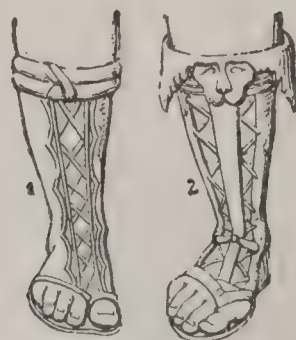
BUTTER, Rock: a mineral which may be regarded as a variety of Alum (q.v.)—an iron alum, appearing as a pasty exudation from rocks that contain alum or its constituents, particularly alum-slate and other schistose rocks. It occurs at Hurlet alum-work, near Paisley, Scotland, and in a number of places on the continent of Europe. It is not unlike butter in color, varying from yellowish white to sulphur yellow. It is rather greasy to the touch, and is easily broken in pieces.

BUTTERFIELD, John: 1783–1869, Nov. 15; b. Helderberg, N. Y.: expressman, and originator of the American Express Co. Beginning as a stage-driver, by thrift and self-education he became owner of nearly all the stage-coach lines in w. N. Y., with extensive interests in a line of steamers on Lake Ontario and the St. Lawrence river. When railroads began to supplant stage lines, he interested himself in their extension, and at about this time founded the American Express Co., in whose affairs he wielded a powerful influence until his death. Realizing the importance of the telegraph, he aided greatly in projecting it, building the Morse line between Buffalo and New York. As pres. of the Overland Mail Co. he contracted with the government, 1858, for the carrying of mail from the Missouri river to the Pacific slope. He greatly assisted in the development of the city of Utica, where he had his residence, and where he died.

BUTTERFISH: see GUNNEL.



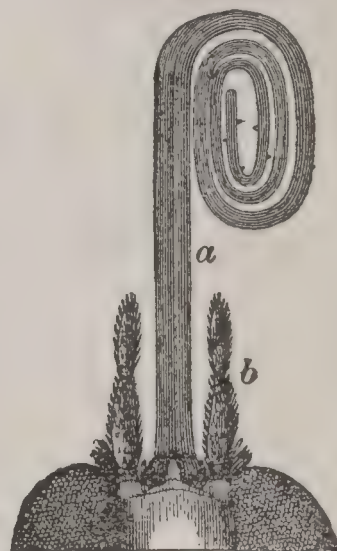
Burnoose.



1, Buskin of Diana; 2, Buskin of Bacchus.



Butomus.



Mouth Parts of Cabbage Butterfly:
a, Suctorial tube formed from first pair of maxillæ; *b*, The labial palps belonging to the second pair of maxillæ. At the base of the former, hints of upper lip, mandibles, and second maxillæ can be seen.



a

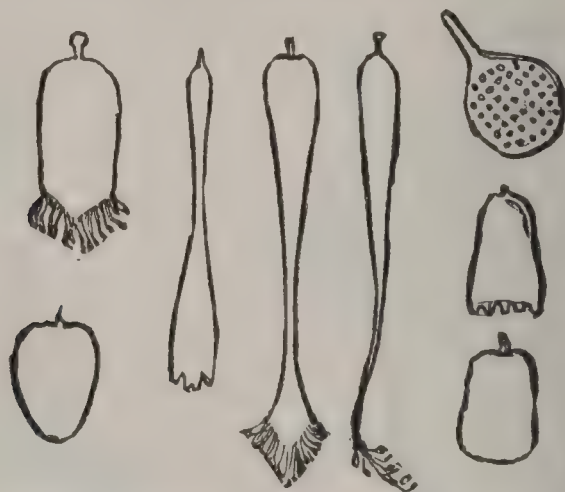


b

Butterfly.—Seasonal Dimorphism—Two forms of the same species (*Papilio ajax*): *a*, Winter form (var. *Telamonides*); *b*, Summer form (var. *Marcellus*).

BUTTERFLY.

BUTTERFLY: the common English name of all the diurnal lepidopterous insects, corresponding with the genus *Papilio*, as originally defined by Linnæus, but forming many genera in the most recent entomological systems. Butterflies have great similarity in almost all respects to other lepidopterous insects (see **LEPIDOPTERA**), but are even more distinguished by brilliancy of coloring, which in butterflies also belongs to the under as well as the upper side of the wings, while the beauty of moths and hawk-moths appears chiefly on the upper side. Accordant with this is the further peculiarity, that almost all butterflies, when at rest, usually hold their wings erect, the under side being thus chiefly exhibited; while the other lepidopterous insects, when at rest, hold their wings in a horizontal or somewhat inclined position, and some have them wrapped round the body. Butterflies are also the only lepidopterous insects which have no spines,



Various forms of Scales (highly magnified) from the Wings of Butterflies.

bristles, or hooks on the margins of their wings, by which the second wing on each side can be attached to the first, but both when flying and at rest, have all their wings quite separate. The manner in which the scales of the wings are imbricated gives those of butterflies a smoother appearance than those of moths and hawk-moths. The antennæ of butterflies are generally simple, slender, and elongated, and terminated by a little club. Their caterpillars have always 16 feet (see **CATERPILLAR**). The pupa or chrysalis is angular; seldom enveloped in a cocoon; generally suspended by the tail, by means of a silky substance, often to a leaf or twig, but sometimes supported by bands around the middle; and generally exhibits more or less of that golden coloring from which both the names *aurelia* [Lat. *aurum*] and *chrysalis* [Gr. *chrysos*] are derived.

Butterflies are found in all parts of the world; they are to be seen during the sunshine of the brief summer extracting nectar from the flowers even of Greenland and Spitzbergen, but they are most numerous in the warmest regions; where, however, many of them live chiefly in the shade of moist foliage, in woods and jungles. Dr. Hooker, describing the scenery on the banks of the Great

BUTTERFLY.

Runjeet in the Sikkim Himalaya, says, that 'by far the most striking feature consisted in the amazing quantity of superb butterflies, large tropical swallow-tails, black, with scarlet or yellow eyes on their wings. They were seen everywhere, sailing majestically through the still hot air, or fluttering from one scorching rock to another, and especially loving to settle on the damp sand of the river edge, where they sat by thousands, with erect wings, balancing themselves with a rocking motion, as their heavy sails inclined them to one side or the other, resembling a crowded fleet of yachts on a calm day.'

Butterflies have no small power of wing; some of them, indeed, of which the wings are comparatively thin and delicate, are inferior in this respect, and have a sort of zigzag flight; but others soar in the air with a steady and continuous motion. Short-lived as they all are generally believed to be, some of the tropical species perform wonderful migrations; concerning which, however, nothing but the fact is yet well known. 'Frequently,' says Sir James Emerson Tennent in his work on *Ceylon*, 'the extraordinary sight presents itself of flights of these delicate creatures, generally of a white or pale yellow hue, apparently miles in breadth, and of such prodigious extension as to occupy hours and even days uninterruptedly in their passage, whence coming no one knows, whither going no one can tell.'

The number of species of B. is very great, and the arrangement of them has been found difficult, chiefly upon account of the great similarity in all important respects which prevails among them all. They are divided, however, into two well-marked sections, of which the first is characterized by having only a single pair of spurs or spines on the *tibiæ* (or fourth joints of the legs), placed at their lower extremity; while in the other section, the *tibiæ* of the hinder legs have two pair of spurs, one pair at each extremity. This distinction, seemingly unimportant in itself, is accompanied by other differences. The second section of butterflies may be regarded as forming a sort of connecting link between butterflies and hawk-moths. A few British species belong to it, but the species are generally tropical, and some of them, found in tropical America, are remarkable for their rapidity and power of flight, and for the migrations which they perform, besides being among 'the most splendid insects in creation,' a resplendent green, inimitable by art, relieving the velvet black of their wings, and varying with every change of light. The beautiful iridescence of the wings of these and many other butterflies is owing to the peculiar position of the scales.

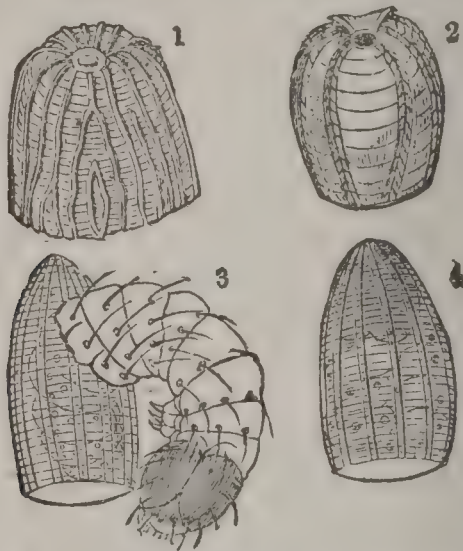
Some groups of butterflies are remarkable for the imperfect development of the first pair of legs, so that they are generally described as having four legs instead of six.

The eggs of butterflies are deposited on the plants, the leaves of which are to supply the food of the caterpillars. In cold and temperate climates, the eggs deposited in autumn are not hatched till the following spring; but it is believed that many species produce several broods in a

BUTTERFLY.

year, as the eggs in summer may be hatched in a few days. The caterpillars of each species are generally confined to some particular kind of plant, the leaves of which they devour; their ravages are well known, but the excessive increase of their numbers is in part restrained by many enemies, and by none more than by the ichneumons (q.v.) and other insects which deposit their eggs in them, and the larvæ of which feed on them. The annexed cut represents a common species of B., with its larva and pupa; for an account of B. transformations, see INSECT TRANSFORMATIONS.

Butterflies vary in size from less than an inch to almost a foot across the expanded wings. The largest species are tropical. Some of the species are very widely distributed: *Cynthia cardui*, of which the caterpillar feeds on the leaves of thistles, is found not only throughout



Eggs of Butterflies, highly magnified:

1. Egg of Queen of Spain Fritillary (*Argynnis Lathonia*); 2. Egg of Peacock Butterfly (*Vanessa Io*); 3. Larva of Large Garden White Butterfly (*Pieris Brassicae*), in the act of bursting from the egg; 4. Egg of some insect, ready to hatch, showing the head and curved body of inclosed caterpillar through the transparent envelope.—These illustrations are from Westwood's treatise on British Butterflies.

Europe, but in Egypt, Barbary, Senegal, Cape Colony, Madagascar, China, Java, Australia, Brazil, and N. America, being, in fact, one of the most widely distributed of all insects. The geographical limits of some other species appear very restricted. The diversity of coloring is almost endless, but a prevalence of certain hues, or of certain modes of the disposal of them, is observable throughout large groups. The caterpillars of many species are variously furnished with spines, those of others have long fleshy prominences, horny at the tip, probably intended as means of defense. The hinder wings of many butterflies are curiously prolonged into tail-like appendages, one or more on each wing, which vary in form, being sometimes long and linear, sometimes broad and widening toward the extremity.

Butterflies are known chiefly as objects of admiration and of pleasing contemplation, enhancing the charms of the most delightful weather, and always associated with the

BUTTERFLY FISH—BUTTERMILK.

most lovely scenes; or—it must be added—as a cause of annoyance by the ravages of their caterpillar young in fields and gardens. There is, however, one small species (*Euphea humata*) which affords a supply of food to some of the wretched aborigines of Australia. Butterflies of this species congregate in such vast numbers on the masses of granite in the mountains, that they are collected by simply making smothered fires under the rocks, in the smoke of



Large Garden White Butterfly (*Pieris Brassicæ*).

a, caterpillar; b, chrysalis; c, perfect insect.

which they are suffocated. Bushels of them are thus procured, and they are baked by placing them on the heated ground, the down and wings removed, and the bodies made into cakes which resemble lumps of fat. The months of November, December, and January are quite a season of festivity from the abundance of this food. See CABBAGE BUTTERFLY: CAMBERWELL BEAUTY: PURPLE EMPEROR, etc.

BUTTERFLY FISH: see BLENNY.

BUTTERFLY WEED, *büt' ter- flī wīd*, or PLEURISY ROOT (*Asclepias tuberosa*, see ASCLEPIAS): plant found in all parts of the United States, which has considerable reputation for the medicinal virtues of its root. The root is large, formed of irregular tubers or spindle-shaped branches, externally yellowish brown, internally white, with a somewhat acrid, nauseous taste when recent, merely bitter when dried. It yields its properties to boiling water, and is administered in the form usually of a decoction, sometimes of a powder. It is diaphoretic and expectorant, and has been found useful in the commencement of pulmonary affections, in rheumatism, and in dysentery.—The stem of the plant is erect and hairy, with spreading branches; the leaves oblongo-lanceolate, alternate, hairy, and somewhat crowded; the flowers orange-yellow, forming numerous umbels.

BUTTERIS, n. *büt' ter- is*, or BUTTRICE, n. *büt' trīs* [F. *boutoir*, a currier's knife, a butteris—from *bouter*, to thrust]: a farrier's tool for paring horses' hoofs.

BUTTERMILK, *büt' ter- mīlk*: the form of milk from which the butter or oily matter has been abstracted: see

BUTTER. B. contains the caseine, sugar, and salts of ordinary milk, and is deficient only in oily matters. It is therefore nutritious, and is largely used in Ireland and Scotland as an article of food, with porridge and with potatoes. It may be drunk *ad libitum*, is a very agreeable cooling beverage, useful in certain febrile and inflammatory conditions. In recent years its use has greatly extended in the United States.

BUTTERMILK FALLS: cascade of Oatka creek, Le Roy, Genesee co., N. Y.; 90 ft. high. Another B. F. is near West Point, N. Y., on Bog Meadow Creek.

BUTTERNUT, or WHITE WALNUT: see WALNUT.

BUTTER TREE: name given to several tropical trees, of different natural orders, the fruits of which yield concrete fixed oils, having the appearance and used for the purposes of butter. The B. trees of India and Africa belong to the genus *Bassia* (q.v.), of the nat. ord. *Sapotaceæ*; the B. trees of Guiana and Brazil to the genus *Caryocar* (q.v.), of the nat. ord. *Rhizobolaceæ*. The Oil-palms (q.v.), and the *Cocos butyracea* (see COCOA-NUT), also may be regarded as B. trees, though not generally receiving that name.

BUTTERWÖRT, but'ter-wört (*Pinguicula*): genus of plants of the nat. ord. *Lentibulariaceæ* (q.v.), distinguished

by a two-lipped calyx, the upper lip trifold, the lower bifid; a spurred corolla, two-lipped and gaping, the upper lip arched; and a globose germen. The species are small plants with only radical leaves, found in the bogs and marshes of different quarters of the world. Some of them possess much beauty when in flower, particularly *P. grandiflora*, a rare native of the s. of France and of Ireland. The common B. (*P. vulgaris*) is abundant in the n. parts of Britain and of Europe. It has the power of coagulating milk. The Laplanders pour reindeer milk, warm from the animal, upon the leaves of this plant, instantly strain it, and set it aside for two or three days, till it acquires the consistence of cream, and some degree of acidity, when it is with them a favorite article of food. A little of it in this state will produce the same effect on warm reindeer milk which was at first produced by the leaves of the plant. The origin of the English name B. is



Butterwort (*Pinguicula vulgaris*):

a, the entire plant; b, a flower.

sometimes referred to the power of coagulating milk, sometimes to the peculiar sliminess of the leaves.

BUTTERY—BUTTOCKS.

BUTTERY, n. *büt'ter-î* [a corruption of *butlery* or place for *bottles*: Sp. *boteria*, the store of wine in a ship kept in *botas* or leather bags (see **BUTLER** and **BOTTLE**)]: a store for drinkables—originally for storing casks and jars of liquor; the room where provisions are laid up; a place in colleges and schools from which provisions are served out: **ADJ.** of or pertaining to the provision store. **BUTTERY-BAR**, or **-HATCH**, the half-door across which provisions are handed out.

BUTTISHOLZ, *bôt'tiss hõlts*: village of Switzerland, canton of Lucerne, 11 m. n.w. from the city of Lucerne. Near to B. is a large mound called the English Barrow, because here are buried 3,000 Englishmen, followers of De Coucy, son-in-law of Edward III. of England, who, while devastating the cantons were defeated and killed by Swiss peasants 1376.

BUTTMANN, *büt'mân*, **PHILIPP KARL**: 1764–1829, June 21; b. Frankfort-on-the-Maine: one of the most distinguished philologists of modern times. He studied at Göttingen under Heyne, and became, 1789, asst. in the Royal Library in Berlin, and rose successively to be sec. and librarian (1811). He held at the same time (1800–08) a professorship in the Joachimsthal Gymnasium in Berlin, which he afterward exchanged for a professorship in the newly founded univ. of that city. B. is known by his Greek grammars, the *Griech. Grammatik* (Berl. 1792; 21st ed. by his son, Alexander B., 1863), and an abridgment of it, *Griech. Schulgrammatik* (4th ed. 1862); both have been translated into English. His *Lexilogus* (translated by Fishlake), and *Ausführliche Griech. Sprachlehre*, or Larger Greek Grammar, which has gone through several editions, are designed for scholars. In his *Mythologus* he has collected his essays on the myths of the ancients.

BUTTOCKS, n. plu. *büt'tõks* [Dut. *bout*, the leg or thigh of an animal, from the large knobbed head of the thigh-bone; *boutje*, a little gigot—from *butt*, the thick end]: the rump, or protuberant part of the body behind; the convexity of the hinder part of a ship. *Note.*—Skeat says *buttock* is merely a dim. of *butt*, an end: OF. *bot*, F. *bout*, by adding *ock*.

BUTTON

BUTTON, n. *bŭt'tn* [F. *bouton*, a bud, a button—from *bouter*, to put to push: W. *both*, a boss; *botwm*, a button—*lit.*, the thing pushed out making knobs on plants]: a small piece of wood or metal, etc., shaped, as it were, somewhat like a bud; the bud of a plant; a small round knob or disk used for fastening parts of the dress together; a small mass: V. to fasten with a button. **BUTTONING**, imp. *bŭt'nĭng*. **BUTTONED**, n. *bŭt'tnd*. **BUTTON-HOLE**, the slit in which the button is caught. **BUTTON-MOLD**, or **-MOULD**, n. *-môld*, a disk of bone, wood, or metal, to be covered with fabric to form a button. **BUTTON-TREE**, the *Conocarpus*, a genus of the order *Combretaceæ*, tropical trees or shrubs. **NOT WORTH A BUTTON**, of no value whatever, or of very little.

BUTTON: well-known appendages to dress, used for fastening or for ornament; also a sort of oblong latch moving upon a pivot in the middle, for fastening the lids of boxes, doors of presses, etc.; also, technically, the mass of fused metal found at the bottom of a crucible or cupel, after fusing or assaying. It is here treated of as an appendage to dress.

The history of button-making is in many ways remarkable. Dating no further back as a trade of any importance than the reign of Elizabeth, it has undergone several extraordinary changes, produced chiefly by the ever-varying fashions in dress, but also by some simple, though ingenious inventions, as well as by foreign competition. In Great Britain, Birmingham has always been the principal seat of the button-manufacture. In the latter portion of last and the early part of the present century, coats were worn 'loaded with innumerable gilt buttons,' and employers on a moderate scale in this manufacture made profits of from £2,000 to £3,000 a year, and their workmen were paid from £2 to £4 a week. Early in the present century the cloth-covered button was introduced to take the place of those made of metal. In 1825, was effected the apparently trivial but really ingenious improvement of making buttons with a canvas tuft instead of a metal shank, by which both the button-holes and the garment itself were less subject to injury. A further alteration, patented 1837, was a mode of covering the button with silk, having a pattern in the centre, the demand for which was at one time so great, that sixty looms were employed in London on the special material required. In 1841, the old Dorsetshire wire and thread button was replaced by the 'three-fold linen button,' still considered by housewives indispensable for underclothing, since neither washing nor mangling destroys it. Of these, one firm in Birmingham, employing about 400 hands, can turn out from 10,000 to 15,000 gross weekly. Birmingham has some 160 button manufactories.

Other materials have been much used. Buttons made of hoof, under the name of 'horn buttons,' were for many years extensively manufactured at Birmingham and sent to all parts of the world. This trade is now insignificant, and what remains of it is in the hands of French makers. Tweed clothing and fabrics in imitation of it have, through

BUTTON.

the necessity of matching their various colors, led to the making of buttons of vegetable ivory (q.v.), which can be readily turned in the lathe, and dyed of various colors. More than 20 tons of it, valued at from £25 to £30 per ton, are weekly consumed in Birmingham in making buttons, and it is largely used for the same purpose in France and Germany.

The trade in 'pearl buttons,' made of mother-of-pearl shells, has long been a leading branch, and employs a greater number of hands than any other. Metal buttons, not relatively so important as formerly, have never ceased to form a prominent section of the trade. They include all sorts for uniforms, trouser buttons, fancy buttons which are gilt, stamped, chased, or enamelled, and many cheap varieties in iron and other metals for export. Numerous kinds of composite buttons also are partly of metal. Glass buttons are made to a considerable extent in Birmingham, but more largely in Bohemia and Paris. Porcelain buttons, an English invention, are now made almost exclusively in France. Vulcanite (q.v.) buttons are largely made in the United States, where the manufacture of various kinds of buttons has now become very extensive. As to other materials which are possible for this use, it is difficult to name one from which buttons have not been made.

In the process of making metal buttons, circular discs, called 'blanks,' are first cut out of sheet brass or other metal by means of fly-presses, worked usually by girls. The fly-press consists of a vertical iron screw with a triple thread, to which screw is attached a horizontal arm, bending downward at the end to form a handle. A punch attached to the press rises and falls with the motion of this handle, and rapidly cuts out the blanks. When large quantities of one pattern are required, a self-feeding, self-acting machine is used, which cuts out the blanks in rows at one blow, turning them out at the rate of 2,000 gross per day. After being annealed the blanks are next made convex by a blow from a stamp. The shanks are formed of wire by a separate machine, which cuts off pieces, and bends them into loops of the required form. When these are soldered on, the buttons are dressed on a lathe. They are then gilded and burnished; some, however, are only lacquered; and some, though gilt, are finished in a dead or frosted style.—'Shell' buttons are those with a convex face, a flat or convex back, and hollow. These are made of two blanks, that forming the face being larger than the back to which the shank is attached. These blanks are pressed into the required shape by dies worked in the fly-press, and then, by another die, the edge of the larger blank is lapped over the smaller, and thus attached without soldering. Livery and other buttons having a device in strong relief are stamped by a die placed in a stamping-press: see STAMPING OF METALS.

In making covered buttons, a metal blank is punched, and its edge is turned up by a die in a fly-press; then a smaller metal blank is punched with a hole in the middle, and of such size, that, when flat, it shall fit into the up

BUTTON.

turned edge of the first: this perforated blank, or *collet*, is next pressed into a concave or dished shape. Two cloth blanks—the face one of silk, and the other for the tuft of thin canvas—are now punched, one considerably larger than the front metal blank, the other somewhat smaller; the larger cloth blank is laid upon the flat face of the metal blank, which is filled with a disc of mill-board or paper, and its edges turned over; these edges are covered by the smaller cloth, and then the collet laid upon them with its concavity toward the cloth. They are now all pressed together in a sort of die or mold, by which means the collet is flattened and spread out, while the upturned edge of the metal blank is turned forcibly over it, thus securing the collet, and with it the cloth which is strained tightly on the face, and its edges bound between the blank and the collet, so that the whole is firmly held together. The linen-covered button for underclothing, above referred to, is formed of a single brass ring with a groove or canal on one face. Into this the edges of the two round linen blanks are placed, so that when the edges of the groove are pressed firmly down, the button is entirely covered with linen.

Buttons with holes, technically called ‘four-holes,’ ‘three-holes,’ and ‘two-holes,’ when of pearl-shell, wood, bone, or ivory, are cut with a tubular saw, turned separately in a lathe, and drilled. When of metal, the blanks are punched, then stamped in dies to the required form; the holes are punched, and ‘rymered,’ to round the sharp edges that would otherwise cut the thread.—Glass buttons are made usually by taking a rod of glass of any color, softening the end by heat, and pressing it into a mold, each half of which is fixed to one limb of a pair of pincers. The shank is placed into a hole in the mold before the melted glass is inserted.

According to an estimate a few years ago the artisans—a large proportion females—employed in the button manufactures of Birmingham, England, was as follows:

Making metal buttons of all kinds.....	1,200
“ covered buttons, including linen.....	1,500
“ pearl buttons.....	2,000
“ vegetable ivory buttons.....	700
“ other kinds, as glass, horn, bone, wood, etc.....	600
Total	6,000

Probably about 1,000 more are employed in London and elsewhere in Great Britain. Before the war with Germany, about 20,000 persons were employed in France. Germany is a still greater producer, the cheaper kinds of fancy buttons made in the Rhenish provinces of Prussia, the glass buttons of Bohemia, and the pearl buttons of Vienna being more extensively exported than those of any other country. Buttons of various kinds are made on a large scale in the United States, though this country still imports them largely from Europe.

BUTTON, *büt'tn*, Sir THOMAS: explorer: sailed with two vessels in 1612, passed through Hudson Strait, reached the

BUTTONWOOD—BUTTRESS.

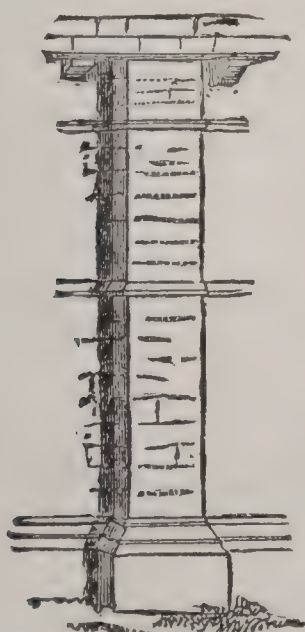
w. coast of the bay at lat. 62°, and called the place Carey's Swan's Nest. Passing southward, he named the Nelson river, and wintered there. The next summer he went to lat. 65°, naming other places, and acquired the conviction that a northwest passage was possible. Returning to England in the fall of 1613 he was knighted, but published no account of his voyage. Purchas gives an extract from his journal.

BUT'TONWOOD: see PLANE.

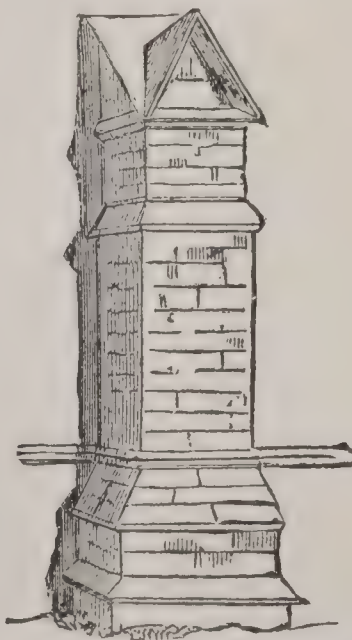
BUTTRESS, n. *bŭt'trēs* [F. *bouter*, to thrust, to push; *boutant*, a buttress or shore-post: alleged to be a mere modification of OF. *bretesche*; mid. L. *brestach'ia*, in senses connected with various parts of fortifications (see BUTT 1)]: an arch or prop which pushes back a wall; a prop or support for a wall; any prop or support; constructed of masonry: V. to support; to prop. **BUT'TRESSING**, imp. propping; supporting; strengthening. **BUT'TRESSED**, pp. *-trēst*. **FLYING BUTTRESS**, an arched open buttress supporting an upper or inner wall by resting on a lower and outer, or on the ground.

BUT'TRESS: projection adding support or strength to a wall. In the classical style, there were no buttresses, their place being, to a certain extent, supplied by pilasters, antæ, etc. The different stages of Gothic architecture are marked by the form of buttresses employed, almost as distinctly as by the form of the arch. The Norman B. was broad, often semicircular, sometimes dying into the wall at the top, and never projecting from it to any great extent. Early English buttresses project much more boldly, and are considerably narrower, than the Norman. They are frequently broken into stages, which diminish in size as they ascend. In the decorated style, this division into stages is almost invariable, the B. being often supplied with niches terminating in pinnacles, and very highly ornamented with carving,

VARIOUS FORMS OF BUTTRESSES.



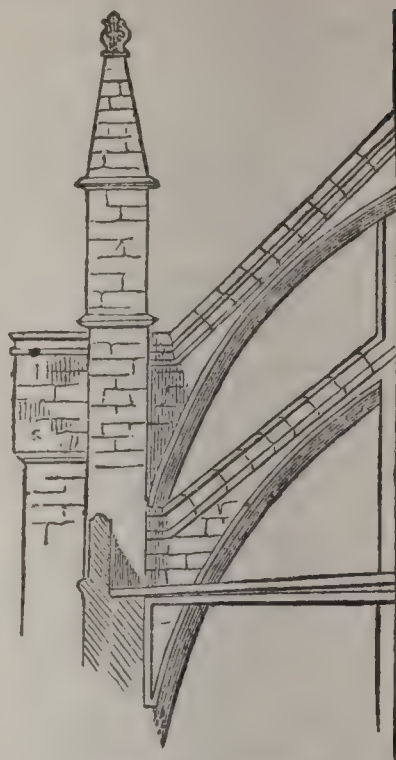
Fountains Abbey,
c. 1170.



Dorchester, Oxfordshire,
c. 1300.



Canterbury Cathedral.



Flying Buttress,
Westminster Abbey.

statues, etc. In the perpendicular style, they retain the forms introduced during the decorated period, the ornamentation, of course, being varied to suit the character of the style. Flying buttresses—i.e., buttresses in the form of a sloping arch, connecting the upper and central portions of an arched structure with the vertical buttresses of the outer walls—were introduced into England at the period of the Early English, though they were used on the continent previously. They were common in Scotland. In England they are generally called arch-buttresses.

BUTTRICE: see **BUTTERIS**.

BUTUA ROOT: see **CISSAMPELOS**.

BUTYL, n. *bū'tīl* [Gr. *bou'turon*, butter; *ūlē*, substance of which a thing is made]: in *chem.*, a hydrocarbon radical contained in several organic substances. **BUTYLIC**, a. *bū-tīl'ik*, of or pertaining to. **BUTYLENE**, n. *bū'tī-lēn*, a gaseous hydrocarbon contained in small quantities in common coal-gas. **BUTYLACTIC ACID**, an organic acid of the lactic acid series. *Note.*—It is common to pronounce, in scientific terms, *-ene* as *ān*, and *-ine* as *ēn*; it is better, however, to pronounce *-ine* as *īn*, *ene* as *ēn*, and *in* as *īn*.

BUTYRACEOUS, a. *bū'tī-rā'shūs* [L. *but'yrum*, butter (see **BUTTER**)]: having the properties of or containing butter. **BUTYRIC**, a. *-tīr'ik*, pertaining to or derived from butter—applied to an acid found in butter. **BUTYRINE**, n. *bū'tī-rīn*, one of the fats present in butter to which it owes its peculiar qualities.

BUTYRIC ACID, *bū-tīr'ik ās'īd*: acid found in butter; best obtained by saponifying butter with potash, then adding dilute sulphuric acid till an acid reaction is attained, and

BUTYRIC ETHER—BUXEOUS.

distilling about one-half of the mixture, adding a little water, and continuing the distillation till the residue is not acid. B. A. may be obtained also by allowing a small quantity of milk-curd to act upon a solution of sugar at a temperature of 77° to 86° , which excites a peculiar process of fermentation resulting in the formation of butyric acid. Some chalk is added to take up the B. A. whenever produced, and the best proportions are 100 sugar, 8 to 10 fresh curd, and 50 chalk, with sufficient water to make a thin liquid. The butyrate of lime is left in the vessel, and on acting upon that by dilute hydrochloric or sulphuric acid, and redistilling, the free B. A. passes over in vapor, and is condensed. B. A. is a transparent, thin, oily liquid, with a most persistent rancid odor. It is mixable in all proportions in water, alcohol, ether, and oil of vitriol; has the specific gravity 973 (water being 1,000), boils at 314° ; though it volatilizes at ordinary temperatures, as appears from the rancid odor of its vapor. Its chemical symbol is $\text{HO}, \text{C}_4\text{H}_7\text{O}_2$, and it combines with bases, such as lime, soda, etc., to form salts.

BUTYRIC ETHER, *bū-tīr'ik ē'ther*, or **PINE-APPLE OIL**: an exceedingly fragrant oil obtained by distilling butyric acid (or the butyrate of lime), alcohol, and sulphuric acid. The material which passes over is the B. E., and it is generally mixed with alcohol, and sold in commerce as *Artificial Pine-apple Oil*. It has the same pleasant flavor which belongs to pine-apples, and there is little doubt that pine-apples owe their flavor to the presence of natural B. E. The artificial variety is now extensively used for flavoring confections, as pine-apple drops; for sophisticating bad rum; and for flavoring custards, ices, creams, and an acidulated drink named Pine-apple Ale. B. E. alone is not used as perfumery, as, when inhaled, in even small quantity, it tends to irritate the air-tubes of the lungs and cause headache, but it is one of the materials in compound perfumes. It is composed of ordinary ether ($\text{C}_4\text{H}_5\text{O}$) and butyric acid ($\text{C}_4\text{H}_7\text{O}_2 + \text{HO}$), and its strict chemical name and symbol is the butyrate of the oxide of ethyl ($\text{C}_4\text{H}_5\text{O}, \text{C}_4\text{H}_7\text{O}_2$). It is remarkable that a substance possessing such a disagreeable odor as butyric acid (that of rancid butter) should be one of the components of a substance with such a pleasant flavor as artificial pine-apple oil.

BUXAR, or **BAXÁR**, *būx-âr'*: town of Shahabad, in Bahar, presidency of Bengal, on the right bank of the Ganges; notable as the scene of a victory, 1764 by Sir Hector Munro. At the head of 7,072 men, only 857 being Europeans, he defeated a native army of 40,000, and captured 133 guns. B. is 62 m. n.e. of Benares. B. is a place of great sanctity among the Hindus. Pop. 16,498.

BUXBAU'MIA: genus of mosses, of which only one species is known, *B. aphylla*, remarkable for its apparent want of leaves; the whole plant above ground seeming to consist of a little conical bulb, with minute scales, which are really its leaves.

BUXEOUS, a. *bŭks'ě-ŭs* [L. *buxus*, the box-tree]: pertaining to the box-tree.

BUXOM—BUXTON.

BUXOM, a. *bŭks'ŭm* [AS. *bocsam*, obedient—from *bŭgan*, to bow, to give way: Ger. *biegsam*, flexible—from *biegen*, to bend: OE. *bowson*, obedient—from *bow*, to bend]: in OE., well inclined to or favorable; obsequious; yielding; gay; lively; brisk and healthy, with a dash of good-humor—applied to a woman. **BUX'OMLY**, ad. -lŭ. **BUX'OMNESS**, n. the quality of being brisk, healthy, and good-humored.

BUXTON, *bŭx'ton*: town in Derbyshire, 33 m. n.w. of Derby; 900 ft. above the sea, in a deep valley, surrounded by hills and moors, which have been tastefully planted; the only approach being by a narrow ravine, by which the Wye flows into the Derwent. The new part of the town is much under the level of the old. Five miles e. of B. is Chee Tor, a perpendicular limestone rock, rising 300–400 ft. from the Wye. B. has for 300 years been famous for its calcareous springs, tepid (82° F.), and cold (discharging 120 gallons of water per minute), and its chalybeate springs. It is visited annually, from June to Oct., by 12,000–14,000 persons, the waters being taken for indigestion, gout, rheumatism, and nervous and cutaneous diseases. Nearly 5,000 strangers can be accommodated. There is an institution, called the Devonshire Hospital, containing 100 beds, supported by subscription, where nearly 1,000 patients are annually boarded and lodged free of charge. The baths and public walks are numerous. Much of the splendor of B. is due to the dukes of Devonshire, one of whom, in the last century, at the cost of £120,000, erected an immense three-storied pile of buildings, of gritstone called the Crescent, a curve of 200 ft., with wings of 58 ft. It includes several hotels, a library, assembly rooms, etc. Near B. is the Diamond Hill, famous for its crystals; and Poole's Hole, a stalactitic cavern 560 yards long. The Romans had baths here. Mary Queen of Scots resided for some time at B., when in the custody of the Earl of Shrewsbury. B. is approached by railway both from n. and s.; and the baths, rebuilt some years ago, are considered among the finest in Europe. Four newspapers are published. Pop. (1871) 3,717; (1881) 6,021; (1891) 7,424.

BUXTON, *bŭks'tn*, **JEDIDIAH**: 1705—abt. 1775; b. Elmlton, Derbyshire. A phenomenal calculator, he was practically inebile in other respects, and, though grandson of the vicar and son of the parish schoolmaster, never learned to write. All his powers went to mental arithmetic, in which he was a prodigy; of a sermon he noted merely the number of words in it, and when taken to the theatre was absorbed in counting those uttered by Garrick, and the steps made by the dancers. In 1754 he walked to London and was presented to the Royal Soc.; the members asked him how many cubical eighths of an inch there are in an object whose sides measure 23,145,789, 5,642,732, and 54,965 yards, and he presently gave a correct answer. The dimensions of any body being given, he could thus estimate the hair's breadths (or forty-eighths of an inch) contained, and was seldom mistaken. While walking over the lordship of Elmlton, 1,000 acres, he mentally and accurately measured

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it in sq. inches. He could give no satisfactory account of his system of calculation, if indeed he had any.

BUXTON, Sir **THOMAS FOWELL**: 1786–1845, Feb. 19; b. Earl's Colne, Essex, England: philanthropist of singular earnestness and force. The eldest son of a wealthy family, and early deprived of paternal guidance, his youth was notable chiefly for a strong development of animal energy, natural to a young Englishman whose stature exceeded 6 ft. 4 inches. At the Univ. of Dublin, his mind at length developed under the necessity of efforts to raise the family fortunes; and though his preparatory education had been almost thrown away, at the age of 21 he left the univ. its most distinguished graduate. In that year he married a sister of the celebrated Mrs. Fry, and entered business as a brewer, with an energy which brought splendid prosperity. His warm religious and moral impulses soon brought him prominently forward as an advocate of philanthropic interests. Prison discipline formed one of the earliest subjects of his efforts. In 1818, he entered parliament as member for Weymouth, which he continued to represent for about 20 years, prominent in every debate on such questions as the amelioration of criminal law and of prison discipline, widow-burning in India, and slave emancipation. The latter, in particular, engrossed a large share of his activity for many years, and no man on that side showed more indomitable zeal and firmness in its advocacy. In 1837, he was rejected by his constituency, and refused ever after to stand for a borough. His philanthropic labors ended only with his life. In 1840, he received a baronetcy. See *Memoirs of Sir T. Fowell B.* (1848).

BUXTORF, *búks'torf*, **JOHANN**; 1564, Dec. 25—1629, Sep. 13; b. Kamen, Westphalia: orientalist. He studied at Marburg, Herborn, Basel, and Geneva. After travelling through Germany and Switzerland, he settled at Basel, where he became prof. of Hebrew 1591. He died of the plague. In knowledge of rabbinical literature, he surpassed all his contemporaries. The two works which prove his extensive acquaintance with this recondite branch of theological study, are his *Biblia Hebraica Rabbinica* (Basel, 1618–19), and his *Tiberias seu Commentarius Masorethicus* (Basel, 1620). The most useful of his grammatical works is the *Lexicon Hebraicum et Chaldaicum* (Basel, 1607).

BUXTORF, **JOHANN**: orientalist: 1599, Aug. 13—1664, Aug. 16; b. Basel; son of Johann B. At five years of age—according to his rather credulous biographers—he could read German, Latin, and Hebrew. To perfect his knowledge of these tongues, he visited Holland, France, and Germany; and in 1630 was appointed to succeed his father in the chair of Hebrew at Basel, where he died. Besides his *Lexicon Chaldaicum et Syriacum* (Basel, 1622), and a work of Maimonides, entitled *More Nevochim* (Basel, 1629), an exposition of obscure passages of the Old Testament, he published from the MSS. of his father a *Lexicon Chal-*

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daucum, Talmudicum, et Rabbinicum (Basel, 1639), and *Concordantie Bibliorum Hebraicorum* (Basel, 1632).

BUXUS: see **Box**.

BUY, v. *bī* [AS. *byegan*; Goth. *bugjan*, to buy, to purchase: comp. Gael. *buidhinn*, to gain]: to obtain a right to anything by giving money or value for it; to purchase; to bribe or corrupt. **BUYING**, imp. **BOUGHT**, pt. pp. *barot*, purchased. **BUYER**, n. *bī'er*, one who buys. **TO BUY OFF** or **OUT**, to get quit of a person's claim or opposition by an equivalent or money. **TO BUY UP**, to purchase extensively particular goods, generally with the view of ruling the market for them. **BUY AND SELL**, and **BOUGHT AND SOLD**, in the sense of dealing treacherously with, or betray.

BUYING OF PLEAS, *bī'ing of plēz*, by lawyers: analogous to **CHAMPARTY** (q.v.).

BUYUKDEREH, *bó-yók-dā'rā*: beautiful suburb of Constantinople, from which it is a few miles distant; on the Bosphorus, in the midst of the most charming scenery. It forms the summer residence of many of the Christian ambassadors, some of whom have splendid mansions here.

BUZZ, v. *būz* [an imitative word: It. *buzzicare*, to whisper, to buzz]: to make a noise like bees; to whisper; to make a hissing or murmuring noise; to spread secretly, as to *buzz* about: N. a hum; a noise like bees and insects; a hissing or murmuring noise caused by the whispering of great numbers. **BUZZING**, imp.: N. the humming sounds of bees; whispering in secret. **BUZZED**, pp. *būzd*. **BUZZINGLY**, ad. *-lī*. **BUZZER**, n. one who. **BUZ!** hush! **BUZ, BUZ!** hush, hush! indicating applause or dissent.

BUZZARD, n. *būz'zērd* [F. *busard*: It. *bozzago*]: a species of hawk; a blockhead or dunce: **ADJ.** senseless; stupid. **BUZZARDET**, n. *būz'zēr-dēt*, a species of hawk much like the buzzard.

BUZZARD, *būz'zērd* (*Euteo*): genus of *Accipitres* (q.v.), or birds of prey, of the family *Falconidæ*, having a rather small and weak bill, which bends from the base, and is not notched, as in falcons. The legs are short and strong, the tarsi covered with scales or with feathers, the toes short, and the claws strong. Buzzards may be regarded as an inferior kind of eagles; they have not the courage of eagles and falcons, nor equal strength of bill or claws. They are large birds; the **COMMON B.** (*B. vulgaris*) measuring almost 4 ft. from tip to tip of its outstretched wings. It is subject to variations of plumage; the prevailing color is brown, with a considerable mixture of black on the upper parts, and of white or grayish-white on the under. It is sluggish and inactive, in comparison with many other birds of the same family; is usually slow in its flight, and often sits long on a tree, watching for prey, which, when it perceives, it glides silently into the air, and sweeping rapidly down, seizes it in its claws. This B., less common in Britain than formerly, is plentiful in nearly all the wooded parts of Europe; it is found in the

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n. of Africa, and is known to exist in the w. of Asia; but it is doubtful how far it extends over that continent, a distinct though very similar species occurring in the Himalaya mountains. The Common B. is, however, a N. American bird. Tame female buzzards have been known in several instances to exhibit so strong a propensity for incubation, and the rearing of young, at the proper season, that they have hatched hens' eggs and brought up the chickens, although if chickens not of their own hatching were brought within their reach, they devoured them. Meat given to the B. nurse was carefully divided among her nurslings, but the chickens found out by their own



Common Buzzard (*Buteo vulgaris*).

instincts the use of grain and other vegetable food.—The ROUGH-LEGGED B. (*B. lagopus*) is very similar to the Common B., but is distinguished by having the tarsi feathered to the toes, while in the Common B. they are covered with scales. It is a rarer British bird, yet not infrequent; it is very widely diffused, being found in the old world from Lapland to the Cape of Good Hope, and equally common in N. America. It is most often seen in marshy districts, skimming over marshes, where it makes prey of frogs.—The RED-TAILED HAWK of N. America is a species of B. (*Buteo borealis*), in very bad repute among farmers and housewives for its frequent invasion of poultry-yards, from which it has acquired the name of *Hen-hawk*.—Several other species of B. appear limited to particular parts of the world, as *Buteo Jackal*—so called from the resemblance of its voice to that of the jackal—to s. Africa; and *B. melanosternon* to Australia. The Australian species has the head, chest, and centre of the belly deep black.—The HONEY BUZZARDS (q.v.) belong to a different genus,

although nearly allied to the true buzzards, as are also the HARRIERS (q.v.), of which the most common British species, the Marsh Harrier, is sometimes called the *Moor Buzzard*.—BALD B. is a name of the OSPREY (q.v.).

BUZZARD'S BAY: on the s. coast of Mass., length 30 m., average width 7 m. It contains the harbor of New Bedford and several others; the Elizabeth Islands separate it from the ocean and Vineyard Sound. Its head is but 4 m. from Cape Cod Bay, and a canal cut across this space would shorten the course of many vessels, and insulate the entire peninsula. Such a canal has been talked of for 150 years, but the lack of a good harbor at the n. end presents a difficulty.

BY, prep. *bī* [AS. *bī*: Ger. *bei*: Dut. *bij*: Sks. *abhi*]: near; close; at hand; at the side; beside; indicating 'instrument,' 'manner,' 'cause,' 'nearness,' or 'difference,' etc.: **AD.** near. **By**, sometimes **BYE**, as a prefix, means concealed; quiet; out of the direct way; private, etc. **BY-BIDDING**, bidding at an auction, not to purchase, but to enhance the price, by one who is employed by the owner. It is unlawful except for preventing the sale of property evidently below its actual value. **BY-CORNER**, n. a private place. **BY-LANE**, n. a private lane. **BY-NAME**, n. nickname. **BY-PAST**, a. past; gone by. **BY-PATH**, n. or **BY-ROAD**, n. a quiet or private road. **BY-PLAY**, n. a side scene carried on, sometimes in dumb-show, while the main action is proceeding. **BY-STANDER**, n. one who stands near; a spectator. **BY-STREET**, n. a street off the main street. **BY-STROKE**, n. a sly or secret stroke. **BY-WALK**, or **By-way**, n. a private walk. **BY-WORD**, n. a common saying; a proverb. **BY-GONE**, n. a past incident or event. **LET BY-GONES BE BY-GONES**, let the past be forgotten. **TO STAND BY**, to stand aside; to aid; to assist. **STAND BY**, prepare to lend a hand. **TO PASS BY**, to pass at the side of. **BY-AND-BY**, or **BY-AND-BYE**, ad. soon; shortly. **BY-THE-BYE**, ad. by the way; introductory to some things not in the direct course of conversation. **BYE! BYE!** *bī*, a familiar reduplication of *good-bye*. **GOOD-BYE**, farewell; suggested as a probable abbreviation of 'good-be-with-ye' or 'God-be-with-ye.' *Note*.—The origin of **BY** or **BYE** in such phrases as *good-bye*, *by-the-bye*, may be explained by the Gael. *bàigh*, kindness, and the probable reduplication, *bàigh!-bàigh!* bye-bye.

BYBLOS, *bīb'lus*: ancient city of Phœnicia, now called Jubel, at the base of the lower range of the Libanus, about half-way between Tripoli and Beyrout. B. was famous in mythology as the birthplace of Adonis, or Thammuz, in whose honor a splendid temple was erected, which attracted many worshippers. The name given to the town by the Jews was Gibleh, and the Gibletes are noticed in the Scriptures as stone-squarers and calkers of ships. A wall belonging, apparently, to the era of the Crusades, surrounds the town, and the remains of a Roman theatre are still visible.

BYBLOS: town in the Egyptian Delta, celebrated for its manufacture of papyrus from the byblus or papyrus plant.

BYE, n. *bī*, **BYES**, plu. *bīz* [*by* in the sense of 'aside' or

'to the side': comp. AS. *by* or *bye*, a dwelling; *byan*, to inhabit]: in *cricket*, a play or shot in which the batsman fails to strike the ball, and the wicket-keeper behind him does not catch it.

BY-LAW, n. [Sw. *bylag*, a town law—from *by*, a borough; *lag*, order, law: Icel. *baejar-lög*, a town law—from *baer*, a town; *lög*, law (see BYRLAW)]: a private or specific regulation, of which a set are usually made by corporate bodies for the control and government of the corporation. By-laws mostly concern matters less organic and fundamental than those set forth in a constitution or a charter. They are binding, unless contrary to the laws of the land, or to the charter, or act of incorporation, or, as has been decided in England, unless manifestly unreasonable. Blackstone states that the right of making by-laws was allowed by the law of the Twelve Tables at Rome; and Mr. Stephen, in his *Commentaries*, states that in the law of England such a right is so much of course, as regards every corporation, that if the charter by which certain persons are incorporated give to a select body, out of their whole number, a power to make B. as to certain specified matters, the body at large is nevertheless at liberty to make them with regard to all matters not specified. Every corporation, too, can of course alter or repeal the B. which itself has made.

BYLES, *bilz*, MATHER, D.D.: 1707, Mar. 26—1788, July, 5; b. Boston: descendant of Richard Mather and John Cotton. He graduated at Harvard Coll. 1725, and was ordained pastor of the Hollis St. Church, Boston, 1733, but had to resign in 1776 because of his loyalty to the crown. This attitude caused him, as he said, to be 'guarded, reguarded, and disregarded,' a sentence of banishment having been commuted. He published sundry fugitive sermons and poems, corresponded in his earlier days with Pope, Swift, and Watts, and had much reputation as a wit, i.e., a punster. A son of the same name and title, 1735–1814, was rector of Christ Church, Boston, and afterward at St. Johns, N. B.

BYNG, *bing*, GEORGE (Viscount TORRINGTON): British admiral: 1663, Jan. 27—1733, Jan. 17; eldest son of John B., of Wrotham, Kent.; entered the navy as a volunteer at the age of 15, and rapidly rose to the rank of lieut. In 1688, his activity and zeal in attaching the officers of the fleet to the cause of the Revolution, commended him to the Prince of Orange, and he was advanced to the rank of captain. In 1702 he took part in the capturing and burning of the Spanish fleet at Vigo, and in the following year was made rear-admiral of the red. The attack on Gibraltar was confided to his sole command, and for his gallant conduct at the battle of Malaga he was knighted by Queen Anne. In 1708 he became admiral of the blue, and commanded a squadron fitted out to oppose an intended invasion of Scotland from France in the interest of the Pretender. He pursued the French fleet to the Firth of Forth, took one ship, and forced the fleet back to Dunkirk; for which service he was presented with the freedom of the city of Edinburgh. On the breaking out of the rebellion of 1715, he was ap-

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pointed to command a squadron in the Downs, and for important services against the French, was created a baronet. In 1718, he commanded the English fleet sent to Sicily for the protection of the neutrality of Italy, and gained a victory over the Spanish fleet off Messina. Soon afterward he was appointed treasurer of the navy and rear-admiral of Great Britain. In 1721, Jan., he was sworn one of the privy council, and in Sep. created Baron Southhill and Viscount Torrington. On the revival of the Order of the Bath, 1725, he was installed one of the knights; and, on the accession of George II., was nominated first lord of the admiralty. He represented Plymouth in parliament 1706-21.

BYNG, JOHN: brave but ill-fated British admiral: 1704-1757, Mar. 14; fourth son of George B. (Viscount Torrington). He entered the navy early, served under his father, and, 1727, became captain. In 1748, he had attained the rank of admiral of the red. In 1756, he was appointed to command a squadron of 10 ships of the line in the Mediterranean, intended for the relief of Minorca, blockaded by a French fleet under La Galissoniere. On May 20 B. made the signal to engage, which was obeyed by Rear-Admiral West with such impetuosity that several of the enemy's ships were driven out of the line; but B. not advancing to his support, the French were allowed to escape, and Minorca was lost. The dissatisfaction in England, on the news arriving, was taken advantage of by the ministry to avert the public odium from their own inefficient measures. B. was tried by a court-martial, and condemned to death, for a breach of the 12th article of war, but recommended to mercy. Sacrificed to the general indignation, he was shot on board the *Monarch*, at Portsmouth, meeting his fate with firmness and resignation. In the fleet, he was not popular, being a strict disciplinarian.

BYNKERSHOEK, *bīn'-kērs-hūk*, CORNELIUS VAN: 1673, May 29—1743, Apr. 16; b. Middelburg, Zeeland: Dutch jurisconsult. He studied at the Univ. of Franeker, took the degree of doctor, 1694, and immediately began practice as an advocate at the Hague. In 1703, he was elected by the states-general a member of the supreme court, and in the exercise of his functions, soon had occasion to observe how defective and vague was the common law of the country. In 1710, with a view to remedy this, he published the first part of his *Observationes Juris Romani*; in 1719, his *Opuscula Varii Argumenti*; and in 1724 he was elevated to the dignity of pres. of the supreme court. In 1733, appeared the rest of his *Observationes Juris Romani*. B. now engaged earnestly in the study of Dutch and international law, acquiring, of the Dutch law in particular, an extensive and solid knowledge. His great work on this subject is *Quæstiones Juris Privati*, which he did not live to finish: and on international law, *Quæstiones Juris Publici*. In addition, B. collected (from his notes) the decisions and proceedings of the supreme court in his time, under the title *Observationes Tumultuariæ*, and besides made a digest under the title of *Corpus Juris Hollandici et Zelandici*, of all the laws of his

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own country, whether statutory, or existing in the decisions of courts, or in the practice of the bar, or in the customs of particular places—perhaps his most valuable work. A complete edition of his works was published by Prof. Vicat, of Geneva, 1761.

BYRD, *bērd*, WILLIAM, F.R.S.: 1674, Mar. 28—1744, Aug. 26; b. Westover, Va. He inherited a large estate, studied in England and the Netherlands, was called to the bar in London, and visited the French court. Returning to Va., he was long receiver-gen. of the revenue, thrice colonial agent in England, 37 years a member of council, and at last its president. He was a commissioner to settle the N. C. boundary in 1728, and in 1733 laid out on his own lands the cities of Richmond and Petersburg. He had the largest private library in America, and was one of its foremost men in that day, alike in mental culture and in public services. His *Westover MSS.*, pub. Petersburg 1841, contribute much to our knowledge of Virginia in his time.

BYRE, n. *bīr* [OF. *bouverie*, a stall for oxen—from F. *boeuf*; L. *bos*, an ox: Gael. *buar*, cattle; *buarth*, a cattle yard]: in *Scot.*, a house for cows; a shelter for cattle.

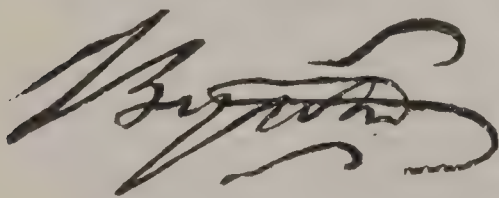
BYRGIUS, *bēr'jī-us*, JUSTUS (properly, JOBST BÜRGI): 1552, Feb. 28—1633; b. Lichtensteig, canton of St. Gall, Switzerland: inventor of astronomical instruments. In 1759, he went into the service of the learned Landgraf of Hesse, Wilhelm IV. His first work was a celestial globe, the surface of which was plated with silver, and in which the stars were placed according to his own observations. The landgraf sent it to the Emperor Rudolf II., who thought it so beautiful that in 1604 he appointed B. his own mechanician. B. subsequently went to Austria, but returned to Cassel, 1622, where he died. Many of his reputed discoveries and inventions are questioned, such as those of logarithms and the proportional compasses; but he seems to have hit upon something like both, while it is certain that he was the inventor of a method of resolving spherical triangles.

BYRLAW, or BIRLAW, or BURLAW, *bēr'law*: a sort of popular jurisprudence formerly in use in Scotland, in villages and among husbandmen. The word is derived from *burgh*. Sir John Skene, writing 1597, when the system was in full force, defines B. as '*leges rusticorum, de re rustica latæ*—laws made by husbandmen, concerning neighborhood to be kept among themselves.'—*Reg. Majest.* lib. iv. As the B. was enacted by common consent of the villagers or neighbors, so it was administered by judges chosen by them from their own ranks. These judges were commonly called 'byrlaw men,' a name still applied in some parts of Scotland to an arbiter, oddsman, or umpire. The courts which they held were called 'byrlaw courts,' and took cognizance of disputes between neighbor and neighbor. B. seems an interesting survival of the system of the ancient Aryan village community.

BYRON.

BYRON, *bî'run*, ANNE ISABELLA MILBANKE: 1792, May 17—1860, May 16; dau. of Sir Ralph Milbanke. She was married to Lord Byron 1815, Jan. 2; the union was not happy, and she left him 13 months later. She inherited the large estates of her uncle and mother, and in 1856 the title of Baroness Wentworth. She gave largely to industrial schools, reformatory institutions, and other benevolent enterprises.

BYRON, *bî'run*, GEORGE GORDON, Lord: poet: 1788, Jan. 22—1824, Apr. 29; b. in Holles street London; only son of Capt. John B., of the Guards, and Catherine Gordon of Gight, an heiress in Aberdeenshire. Captain B. and his wife did not live happily. Domestic peace perished in the conflict of their ungovernable tempers. The husband's habits were profligate in the extreme, and the wife's fortune was soon squandered in the debauch and at the gambling-table. Separated from her husband, the lady retired to the city of Aberdeen with her little lame boy, George, whom she passionately loved, her sole income at this time being about £130 per annum. In his 11th year, B. succeeded his grand-uncle, William, Lord B.; and mother and son immediately left the north for Newstead Abbey, the ancient seat of the family, a few miles from Nottingham, in the romantic district which Sherwood Forest shadowed, once familiar with the bugle of Robin Hood. On succeeding to the title, B. was placed in a private school at Dulwich, and thereafter sent to Harrow. The most remarkable thing about B.'s early years was his extraordinary attachments. Like almost every member of the poetic tribe, he 'had a passion for the name of Mary.' In his 8th year, in Aberdeenshire, he fell in love with Mary Duff. Margaret Parker, his cousin, who died early, was his next idol. His strongest passion was, however, for Mary Chaworth. This lady he first met on her visit to Newstead, 1803, at which date he was in his 16th year. Miss Chaworth's father had been killed in a duel by Lord B., grand-uncle of the poet, and marriage would have healed the family feud, and would have joined rich estates. But it was not to be. Miss Chaworth was B.'s senior by two years, and evidently felt little flattered by the worship of the lame Harrow boy. Next year came the parting interview described in *The Dream*. In 1805, B. removed to Trinity College, Cambridge, and two years thereafter his first volume of verse, entitled *Hours of Idleness*, was printed at Newark. The poems were not without merit, but they might have been written by any well-educated



Autograph of Byron.

lad, who, in addition to ordinary ability, possessed a slight touch of poetic sensibility. The volume was fiercely assailed by Lord (then Mr.) Brougham in the *Edinburgh Review*, and his sarcasms stung B. into a

poet. The satire, *English Bards and Scotch Reviewers*, was written in reply to the article in the *Edinburgh*, and the

BYRON.

town was taken by a play of wit and a mastery of versification unequalled since the days of Pope. In the babble of praise that immediately arose, B. withdrew from England, visited the shores of the Mediterranean, and sojourned in Turkey and Greece. After his return, he published the first two cantos of *Childe Harold*, in 1812, with immense success, and was at once enrolled among the great poets of his country. During the next two years, he produced *The Giaour*, *The Bride of Abydos*, *The Corsair*, and *Lara*. While these brilliant pieces were flowing from his pen, he was indulging in all the revelries and excesses of the metropolis. What was noblest in the man revolted at this mode of life, and, in an effort to escape from it, he married Miss Milbanke, daughter of Sir Ralph Milbanke, a baronet in the county of Durham (see BYRON, ANNE ISABELLA MILBANKE). This union proved singularly infelicitous. It lasted only a year, and during that brief period, money embarrassments, recriminations, and all the miseries incident to an ill-assorted marriage, were frequent. After the birth of her child, Ada, Lady B. retired to her father's house, and refused to return. This event, from the celebrity of one of the parties, caused considerable excitement in the fashionable world. B. became the subject of all uncharitable tongues. The most popular poet was for a time the most unpopular individual in the country. In one of his letters, written from Italy some years later, referring to the slanders current at the time, he thus expresses himself: 'I was accused of every monstrous vice by public rumour and private rancor. My name, which had been a knightly or a noble one since my fathers helped to conquer the kingdom for William the Norman, was tainted. I felt that if what was whispered, and muttered, and murmured was true, I was unfit for England; if false, England was unfit for me. I withdrew.' The separation from his wife, and the departure from England, mark a stage in B.'s genius. A new element of power had entered into his verse; the reader feels it quite distinctly in the magnificent burst of exultation that opens the third canto of the *Childe* —

Once more upon the waters, yet once more!

Misery and indignation stimulated him to remarkable activity. Four months' stay at Geneva produced the third canto of *Childe Harold* and *The Prisoner of Chillon*. *Manfred* and *The Lament of Tasso* were written 1817. The next year, he was at Venice, and finished *Childe Harold* there; and, in the gay and witty *Beppo*, made an experiment in the new field which he was afterward to work so successfully. During the next three years, he produced the first five cantos of *Don Juan*, and a number of dramas of various merit, *Cain* and *Werner* being at opposite poles. In 1822, he removed to Pisa, and worked there at *Don Juan*, which poem, with *The Vision of Judgment*, occupied his pen almost to the close of his life. Morally, his Italian life was reprehensible, and his genius was tainted by his indulgences. At the close of his career, he was visited by a new inspiration; the sun, so long obscured,

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shone out gloriously at its setting. In the summer of 1823, he sailed for Greece, to aid the struggle for independence with his influence and money. He arrived at Missolonghi, 1824, Jan. 4. There he found nothing but confusion and contending chiefs; but in three months he succeeded in evoking a kind of order from the turbulent patriotic chaos. His health, however, began to fail. On Apr. 9 he was overtaken by a shower while on horseback, and fever and rheumatism followed. Medical aid was procured, and copious bleeding was recommended; but this B., with characteristic wilfulness, opposed. After twenty-four hours' insensibility, he died at evening. His body was conveyed to England; and, denied a resting-place in Westminster Abbey, it rests in the family vault in the village church of Hucknall, near Newstead. A monument to B. was uncovered at Missolonghi 1881, amid demonstrations of gratitude to his memory.

Lord B. is a remarkable instance of the fluctuations of literary fashion. Elevated to the highest pinnacle of fame in the heyday of his early popularity, he was unduly disregarded after his death, when the false romance which he threw around himself and his writings began to wear away; and it is only during the last 20 or 30 years that the proper place has been found for him in the public estimation. He is high, but not the highest. The resources of his intellect were amazing. He gained his first reputation as a depicter of the gloomy and stormful passions. After he wrote *Beppo*, he was surprised to find that he was a humorist; when he reached Greece he discovered an ability for military organization. When the school-girls of England fancied their handsome idol with a scowling brow and a curled lip, he was laughing in Italy, and declaring himself the most unromantic being in the world. And he was right. Take away all his oriental wrappings, and you discover a sincere Englishman, who, above all things, hates cant and humbug. In *Don Juan* and his *Letters* there is a wonderful fund of wit, sarcasm, humor, and knowledge of man. Few men had a clearer eye for fact and reality. His eloquence, pathos, and despair; his *Manfreds* and *Childe Harolds*, were only phases of his mind. Toward the close of his life he was working toward his real strength, which lay in wit and the direct representation of human life. If his years had been extended—he would probably have deserted poetry for prose, gaudy, colored fiction for sober fact; and the assertion may be hazarded that the English novel would have boasted of another and a greater Fielding. See the *Life, Letters, and Journal* of B., by Thomas Moore (1830); Leigh Hunt's *Lord B.* (1828); the Countess Guiccioli's *Recollections of Lord B.* (1869); and Prof. Nichol's short work on *Byron* (1880).

BYRON, HENRY JAMES: b. 1835 at Manchester; dramatist. He was educated in London and called to the bar, but turned early to literature, edited *Fun*, and published a novel *Paid in Full*. In 1858 his burlesque, *Fra Diavolo*, was produced at the Strand; it has been followed by many

BYRON—BYSSUS.

travesties, farces, and comedies. In 1869, Oct., he began to act at the Globe Theatre, London, in a play of his own. He d. after a short but successful career 1884, Apr. 11.

BYRON, JOHN, F.R.S.: 1691–1763, Sep. 23; b. at Kersall, near Manchester: poet. He studied at Trinity Coll., Cambridge; was a fellow of it 1714–16, and contributed to the *Spectator* the famous pastoral, *Colin and Phebe*. Cut off from his relatives by marriage with a cousin, and reduced to straits, he invented and taught a system of shorthand, which brought him support, reputation, and the jocosely affectionate title of Grand Master. Afterward inheriting the family estate, he spent his later years at Kersall. He had no care for fame, published little, and wrote merely to amuse himself and friends; but his *Poems*, posthumously gathered in 2 vols. 1773, reprinted 1814, show a powerful mind and views more familiar to our time than to his own; among them are several of our finest epigrams, and a Christmas hymn now in almost universal use. His originality and wit equalled his piety; though a disciple of Jacob Behmen, his theology was eminently rational. The word *bibliolatry* appears to be of his coining. His *Literary Remains* were published by the Cheatham Society, 1857. John Wesley called him ‘an uncommon genius, a man of the finest and strongest understanding.’

BYRON, The Hon. JOHN: 1723, Nov. 8—1786, Apr. 10; b. Newstead Abbey; second son of the fourth Lord Byron, and grandfather of the poet. He entered the navy in childhood, was a midshipman in Lord Anson’s squadron, suffered shipwreck on an island off the coast of Patagonia, and remained there five years, as described in his *Narrative*, 1768. Many doleful experiences at sea won him the name of ‘Foul-weather Jack.’ He served in the war with France, destroyed the fortifications of Louisburg 1760, commanded an expedition to the South Sea 1764–66, circumnavigated the globe, and discovered two islands, one of which was named from him. In 1769, he was made gov. of Newfoundland, and in 1776 vice-admiral. In 1778, he was sent to the West Indies, and fought the French under Count D’Estaing off Granada, 1779, July 6.

BYRON BAY: on the n.e. coast of Labrador; lat 54° 40’ n.; long. 57° 30’ w.

BYRON ISLAND: one of the Gilbert Islands (q.v.) in the Pacific Ocean, near the equator.

BYSSUS, n. *bīs’sus* [L.—from Gr. *bussos*, fine flax]: in *conch.*, the fine silky filaments by which the mussel and some other bivalves attach themselves to the rocks and sea-bottom; in *bot.*, the silky tufts of mold or fungus-growth springing from damp and decaying substances. BYSSOLITE, n. *-ō-līt* [Gr. *lithos*, a stone]: a term applied to fine fibrous varieties of amianthus, tremolite, etc. BYSSINE, a. *-sīn*, of or like silk. BYSSACEOUS, a. *-sī’shūs*, in *bot.*, composed of delicate filaments resembling cotton or wool. BYSSOID, a. *-soyd* [Gr. *eidos*, form]: in *bot.*, very slender, like a cobweb. BYSSIFEROUS, a. *bīs-sīf’ēr-ūs* [L. *fero*, I bear or carry]: producing a byssus.

BYSSUS.

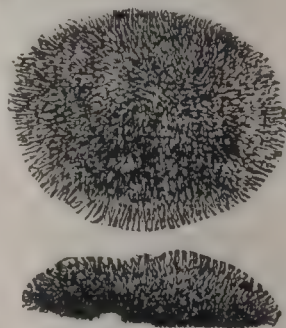
BYSSUS, *bis'sūs*: bundle of silky filaments by which many lamellibranchiate mollusks—bivalve shells—attach themselves to rocks or other fixed substances. The B. springs from a cavity at the base of the solitary foot of the mollusk, and its filaments, capable of being reproduced if destroyed, are secreted by a glandular tissue which occupies a furrow running nearly to the extremity of the foot. They are united at the base in a common mass, and are often considerably divergent. They are guided to their place by the foot, and expand into a sort of disk at the point of attachment, so as to have a firm hold. A few



Byssus of Common Mussel.

common mussels in an aquarium readily afford an opportunity of observing the B., particularly when the filaments are attached to the glass-sides of the vessel. In the *Pinna* (q.v.) of the Mediterranean, the B. is remarkably long and delicate, has a beautiful silky lustre, is very strong, and is capable of being woven into cloth, upon which a very high value is set; but the animal which produces it is now so rare, that it is almost exclusively an article of curiosity. This manufacture was known to the ancients.

BYSSUS: genus established by Linnæus to include some of the lowest and most obscure forms of vegetation, and defined as having a substance like fine down or velvet, simple or feathered. Botanists sometimes ranked it among *Algæ*, sometimes among *Fungi*; it has been made the type of a group *Byssaceæ*, and placed among Lichens. Some have regarded this group as entitled to the rank of a distinct order, 'comprehending the filamentous fungi found in cellars, and similar plants;' but others reject the genus as altogether spurious. Some of the species once included in it have now been satisfactorily shown to be Lichens, others to be *Confervaceæ*, while many appear to be really not distinct vegetable forms, but cryptogamic plants prevented by unfavorable circumstances from proper development. The green incrustations formerly regarded as species of B., have been found to be the primary germination of mosses, often species of *Polytrichum* and *Tortula*. It cannot be said,



Black-rock Byssus.
(*Byssus nigra*).

BYSTRÖM—BYTTNERIACEÆ.

however, that the nature of all the vegetable forms which have been referred to the genus *B.*, has yet been ascertained. Some are very phosphorescent, and are found generally where some higher form of vegetation is undergoing decay.

BYSTRÖM, *bü'ström*, JOHANN NIKOLAUS: 1783, Dec. 18—1848, Mar. 13; b. Philippstadt, province of Wermland, Sweden: sculptor; educated under Sergell of Stockholm. In 1809, he obtained the highest prize in the Swedish Acad. of Arts, and in 1810 went to Rome, where he executed his first independent work, a *Drunken Bacchante*, and sent it home. It was received with great approbation, and B. had to repeat it thrice. In 1815, he returned to Stockholm, and surprised the newly elected crown-prince by exhibiting a colossal statue of himself, which he had finished all but the head in Rome, and had found means to complete quietly in Stockholm. The crown-prince was highly gratified, and commissioned B. to execute colossal statues of Charles X., XI., and XII. After 1838 he resided in Stockholm; but returned to Rome, 1844, and died there. His chief works are: *A Nymph Going into the Bath*, *A Reclining Juno Suckling the Young Hercules*, *Hygeia*, *A Pandora Combing her Hair*, *A Dancing-girl*, a statue of Linnæus, and colossal statues of Charles XIII., Gustavus Adolphus, and Charles XIV. B. excels in the delineation of females and children, but his male figures lack strength of character; his conceptions are always true to nature, his grouping is skilful and pleasant, and his execution clear and distinct.

BYTHNER, *bīt'nēr*, or **BÜTTNER**, *büt'nēr*, VICTORINUS: d. abt. 1670: Polish physician and philologist. He became prof. of Hebrew at Oxford Univ., and published (1645) *Lyra Prophetica Davidis Regis*.

BY-TOWN, *bī-town*: former name of a town of Upper Canada, on the Ottawa, from Colonel By of the Royal Engineers. It is now *Ottawa* (q.v.) cap. of the Dominion of Canada.

BYTTNERIACEÆ, *bīt-nē-ri-ā'sē-ē*: nat. ord. of exogenous plants, sometimes united with the ord. *Sterculiaceæ* (q.v.), also closely allied to *Malvaceæ* (q.v.), from which it differs, especially in the stamens not being columnar—though more or less united, generally into a cup or tube—also in the anthers being turned inward, and 2-celled. The species of this order are trees, shrubs, or half-shrubby plants, chiefly in tropical climates, though some are natives of the temperate zones. About 400 have been described. The flowers of many are beautiful. The most important product of the order is COCOA (q.v.). The fruit of *Guazuma ulmifolia*, a native of Brazil, is eaten, being filled with a sweet and pleasant mucilage. The young bark of this tree yields, when macerated, a copious mucilage, and is therefore used in Martinique for clarifying sugar, as is that of *Kydia calycina* in the n. provinces of India. *Guazuma ulmifolia* was introduced into India, and at one time largely cultivated in the

BYZANTINE.

Madras presidency, under the name of Bastard Cedar, that its foliage and young shoots might be employed as fodder for cattle. Its straight, luxuriant young branches yield a strong fibre. The bark of other species of this order also affords a tough fibre used for making cordage, particularly that of *Microlaena* (or *Schillera*) *spectabilis* in the regions on the s. base of the Himalaya, *Abroma augustum* in various parts of India, *Dombeya spectabilis* in Madagascar, and *D. umbellata* in the Isle of Bourbon. *Abroma augustum* has been especially recommended to attention and cultivation on account of its fibre, which is beautiful, white, fine, strong, and produced in abundance. The plant grows to be a handsome small tree, having hairy-lobed leaves and beautiful drooping purple flowers; but may be treated much as willows grown for basket-making, and in this way yields two, three, or even four crops of cuttings annually, which are peeled and the bark macerated in order to the separation of the fibre.

BYZANTINE, a. *bĭz-ăn'tĭn* or *bĭz'ăn-tĭn*: relating to Byzantium. BYZANTINE, n. *bĭz'ăn-tĭn*, a large gold coin; also BEZANT: see BEZANTS.

BYZANTINE ART.

BYZANTINE ART, *bĭz-ăn'tĭn*: art of the period of the emperors of the East at Constantinople. From the time of Constantine the Great, the emperors of the East arrogated to their imperial city the pre-eminence which, ancient Rom. had long possessed; and, as a consequence of this assumption, Constantinople, or Byzantium, as it continued to be called, became the rival of the mother-city in the richness and variety of its artistic monuments. In Rome, indeed in the whole of Western Europe, the first effect of the influx of the mighty stream of barbarian life, and the consequent dissolution of existing society, was the almost total suppression of artistic effort. It was then that the artists of the West, willing and eager to avail themselves of the invitation held out to them, poured into Constantinople, carrying with them what remained of the artistic life of the ancient world. Byzantium was the hearth on which, during the dark period of the middle ages, those feeble sparks of ancient art were kept alive, which served to kindle the new and independent artistic life of the modern world. Not only were the painters and sculptors of Italy indebted to the art of Byzantium for the tradition of that ideal mode of conception to which the term classical is peculiarly applied, but artists in every department derived thence the elements of that technical knowledge without which the embodiment of such conceptions is impossible. This practical acquaintance with the technical rudiments of their respective arts, which could scarcely have been derived from a mere examination of ancient works, was communicated to the fathers of Italian art by living Byzantines, some of them probably the descendants of those whom barbarian conquests had driven into the East, and whom the conquests of a still more barbarous race from Asia now restored to Western Europe. It is impossible to doubt that modern art was largely indebted to this circumstance for the marvellous stride which it took immediately after the taking of Constantinople by the Turks. But though the chief value of B. A. may consist in its having thus transmitted to us the succession of antiquity, it was not devoid of original and individual character; and it is only so far as it possesses this, and not when regarded as a mere conservation of antique types and processes, that it takes rank as a school of art. The characteristic element in B. A. may be described as the earliest artistic recognition and representation to the senses of what was new and peculiar in Christian as opposed to heathen life. To the fullest extent to which it could claim a separate existence, B. A. was Christian art; and consequently in Germany, where the subject has received most attention, the two terms are frequently synonymous. The appearance of B. A., in this its only peculiar sense, dates from the age of Justinian, in the earlier half of the 6th c., and its productive period may be said to terminate with the conquest of the Eastern Empire by the Crusaders, 1204. But though its declension dates from this event, B. A. continued in considerable vigor till the final destruction of the Empire of the East,

1453; and even now may be seen as the inseparable hand-maid of the Greek Church, both in Europe and in Asia. It is in this point of view, and particularly as the basis of artistic life in Russia, that B. A. possesses its chief living interest in our day. What Rome was to the Western, Byzantium was to the Eastern, European; and the relation of the latter to his mother-city, though commencing at a somewhat later date, continued during the whole of the middle ages

Though the inhabitants of Eastern Europe thus derived their traditions of antiquity from a meaner source than the Romanic nations, they received them more unbroken; and, from first to last, were subjected to their influences during a much longer period. To them the living voice and hand continued to communicate what for nearly a thousand years Italians, Spaniards, and Franks could seek and find only in the dead image and letter; and if anything still remains unrecorded of ancient thought, it doubtless dwells on Greek,



Church of St. Sophia at Constantinople:
Specimen of Byzantine Architecture.

and not on Roman or German tongues. Indolent, luxurious, and dissolute as their ancestors had been in classical times, the citizens of Constantinople were distinguished by an intellectual character, which, unfruitful and enfeebled though it was, was systematic, subtle, mystical, and pedantic. They were eminently an instructed people; but, like individuals whose glory is in the past, they were more conservative than original; and, however much of their productions may be despised as chaff, it is impossible to overestimate the value of the grains of gold which clung to their memories.

BYZANTINE ARCHITECTURE. The typical form of B. architecture, at least as applied to ecclesiastical purposes, was fixed by the church of St. Sophia, which still stands as the great mosque of Constantinople. It was built, or rather rebuilt, by the orders of Justinian, the architects being Anthemius of Tralles, and Isidorus, the Elder, of Miletus, and completed A.D. 537. Though the largest and most magnificent, the church of St. Sophia was but one of 25 churches

erected in the capital, and of a vastly greater number of ecclesiastical structures with which the provinces were adorned by the pious emperor. The style thus introduced largely influenced the architecture even of Western Europe; and in St. Mark's at Venice, the churches at Ravenna and elsewhere on the Adriatic, and even in the cathedral of Aix-la-Chapelle, we have examples of churches almost purely Byzantine. The fundamental principle in the construction of Byzantine churches was an endlessly varied application of the Roman arch, while its exhibition in the form of the cupola was their most characteristic feature. In the St. Sophia, as was generally the case, the cupola covered the principal central portion of the church, and was supported by strong and lofty pillars, bound together by bold arches. To this central space were usually joined others of smaller size, which were covered by half-cupolas or arches of more ordinary construction. Though frequently in the form of a



Byzantine Column.

Greek cross, with the great cupola rising in the centre, and smaller or semi-cupolas surmounting the four arms, neither this nor any other plan was consistently adhered to in Byzantine churches. The windows were always semicircular, similar to those in the Romanic churches of Germany, and in our own Saxon or early Norman churches; but the doors were frequently square-headed, after the classical model. Many of the details, such as the square capitals tapering downward, and the bold projecting moldings ornamented with foliage, seem to have owed their origin entirely to the ingenuity of Byzantine architects. The earlier By-

zantine churches were profusely ornamented with mosaics, which, after the admixture of the Gothic element, and the adoption of the pointed arch, gave place to fresco-paintings. The constant use of the Apse (q.v.) is, after the cupola, perhaps their most marked feature. The following division into periods, though, like most divisions of the kind, somewhat arbitrary, has the authority of M. Couchaud, an eminent French architect, in its favor, and is, apparently, adopted by Parker: 1. From the time of Constantine to the middle of the 6th c.; 2. From the beginning of Justinian's reign to the 11th c., which comprises the greater part of the existing buildings of the pure Byzantine type; 3. From the 11th c. to the conquest of Greece by the Turks, when the influence of the Venetian conquests is apparent in the intermixture of Italian and Gothic details and characteristics.

BYZANTINE SCULPTURE. When contrasted with the ignoble, tasteless, and meaningless productions of the later plastic art of Rome, that of Constantinople claims admiration and respect. The figures are not deficient in dignity either in form or in attitude, and a deeply Christian sentiment is traceable both in their general conception, and in

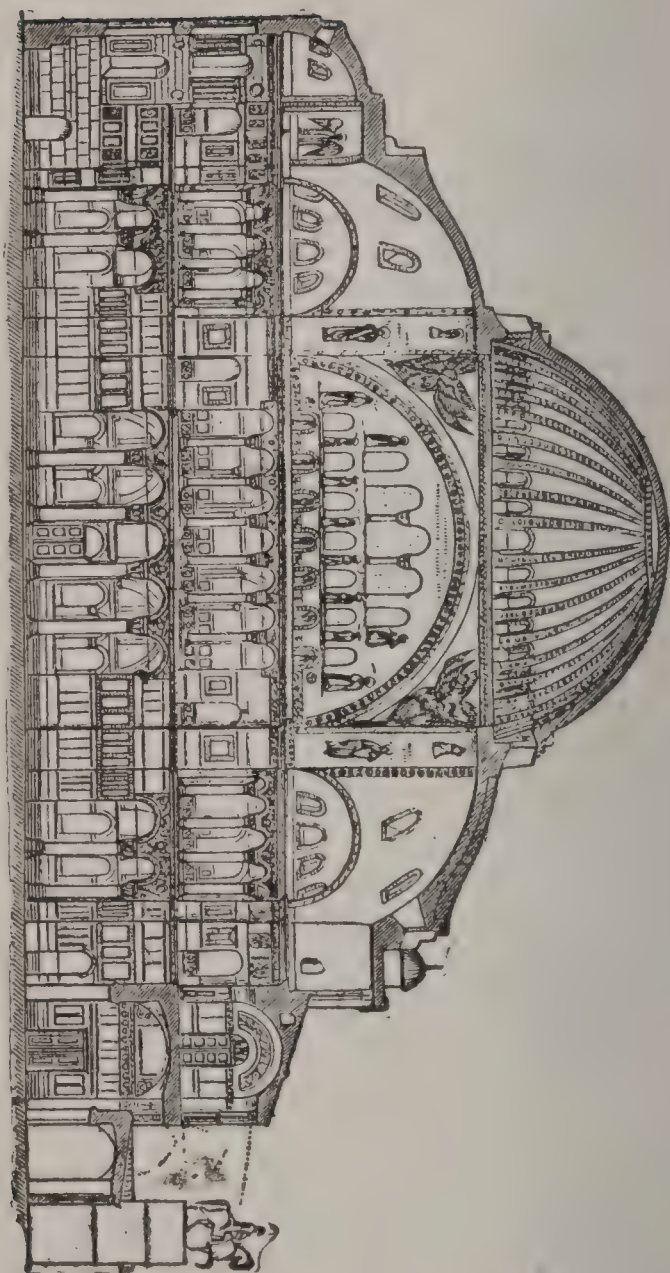
BYZANTINE ART.

their rich and significant symbolical accompaniments. In sculpture, as in architecture, the peculiar Byzantine type first exhibits itself toward the beginning of the 6th c. Together with unmistakable reminiscences of the antique, it shows characteristics as unquestionably oriental. The figures are positively laden, not with drapery alone, but with costume, which obscures the nobler and freer lines in which the ancients delighted. The execution is careful, even painful. All this becomes more and more the case as time advances, the earliest Christian works, and those immediately suggested by the antique, exhibiting such faults in only a limited extent. Down to the 12th c., the defects above noted were the worst which could be laid to the charge of B. sculpture, and it is scarcely earlier than the 13th c. that it assumes that mummy-like aspect by which it is too generally known. The art of carving in ivory was practiced with great success at Constantinople, and in the examples of it which remain, the gradual decline—the *benumbing process*, as it has been aptly called—may be traced with great distinctness. Of this species of work, in its earlier and better time, a fine specimen in alto-rilievo of the ‘forty saints’ may be seen in the museum at Berlin. The decorations of the churches, and of the sacred vessels used in the service of the altar, formed no insignificant objects of art in the better Byzantine period. Cups, plates, lamps, candlesticks, crosses, and the like, were either of gold or silver, and frequently adorned with jewels, while the altar itself, the chancel, and sometimes the whole interior of the church, were covered with precious metals, the panels being adorned with mosaics or frescoes.

BYZANTINE PAINTING. The same characteristics above ascribed to the sculpture belonged to the pictorial efforts of the artists of Byzantium, and of the neighboring countries whose artists were mostly their imitators. The execution was careful and anxious rather than skilful, and such skill as remained was exhibited in the mechanical perfection with which the gilding of the backgrounds and other details were managed. Of Byzantine pictures, the best existing specimens are in Italy, and belong especially to the school of Sienna. The picture of the Virgin in the church of St. Domenico at Sienna, by Guido, bearing date 1221, deserves special mention. Much labor was expended on the illumination of MSS. of the Scriptures, and of these many beautiful examples, as fresh as when they were painted, may be seen in most of the larger public libraries of Europe. The chief interest attaching to B. painting consists in the parental relation in which it stood to the art of Italy. Cimabue may be regarded as its immediate heir: and in the works of Giotto, Leonardo da Vinci, Pietro Perugino, and even of Raphael in his earlier time, the traces of the inheritance are unmistakable. See **PAINTING**.

BYZANTINE EMPIRE.

BYZANTINE EMPIRE, styled also the EAST ROMAN, EASTERN, or GREEK EMPIRE: founded A. D. 395, when Theodosius the Great, at his death, divided the Roman empire between his two sons, Arcadius and Honorius. The former, a weak and luxurious character, was made emperor of the eastern division, formerly included under the prefectures of the East and of Illyricum—namely, Syria, Asia Minor, and Pontus, stretching along the shores of the Black Sea in Asia; Egypt in Africa; and Thrace, Mœsia (now Bulgaria), Macedonia, Greece, and Crete in Europe. Arcadius left the government of the empire in the hands of his minister, Rufinus, from whom it passed to the eunuch Eutropius, and afterward to Gainas, the murderer of Rufinus. Gainas fell by his ambition in 401, and the shameless and avaricious Empress Eudoxia ruled until death, 404. See ARCADIOUS. After Theodosius II., a minor, under the guidance of the prefect Prætorio Anthemius, had held the reins during six years, he resigned the government in favor of his sister Pulcheria (Augusta), who ruled powerfully while her brother was kept apart from all state affairs. Western Illyria (comprehending Pannonia, Dalmatia, and Noricum) was ceded to the Eastern empire by the Roman emperor, Valentinian III.; and after several victories achieved by the Byzantine general, Ardaburius, over the Persians, a part of Armenia also was annexed. Nevertheless, Thrace and Macedonia could be secured from the destructive conquests of Attila only by the payment of tribute. After the death of Theodosius II., Pulcheria married the senator Marcianus (450–457), whose firmness repelled the invasions of Attila. Marcianus was followed by Leo I., surnamed Macella (the Butcher), a Thracian of low birth, but elevated to the throne by the commander-in-chief, Aspar, who, being himself an Arian, would not venture to encounter the perils that sovereignty might have entailed on one of his religious views. Leo II., grandson of the former, succeeded, but died after a few months, in consequence of which the crown came into the possession of his father, Zeno (reigned 474–491), who was banished by Basiliscus (475), but who re-ascended the throne 477. Though a weak and unpopular ruler, he contrived to retain his power in spite of several serious revolts. The internal distraction of the empire, to which, as at other times, religious strifes added considerably, increased greatly during the reign of Zeno, and the invasions of the Goths were prevented only by gifts and stratagems. Ariadne, widow of Zeno, by her second marriage raised the courtier Silentiarius to the throne under the title Anastasius I. (reigned 491–518). By the help of the Goths this monarch overthrew, after a six years' contest, the robber tribes of Mount Taurus. A new enemy, however, now appeared on the Danube in the Bulgarians, against whose desolating raids Anastasius built the Long Wall, to protect the peninsula on which Constantinople lies. The war with the Persians also broke out anew during his reign, and religious tumults often purpled the streets of Constantinople



Byzantine Architecture.—Section of St. Sophia, Constantinople.

itself. After his death, the army raised Justinus I. to the throne. He maintained his position mainly through the favor of the clergy, whom he had conciliated by his severe persecution of heretics.

His nephew, Justinian (q.v.), succeeded (reigned 527–565), and became celebrated by his code of laws, and by the victories of his great generals, Belisarius (q.v.) and Narses (q.v.). But the rapid decline of the empire after his death showed that he had not been able to give it internal consolidation or vitality. It was during the reign of Justinian that those pestilent contests of the Blues and Whites against the Greens and Reds (political factions so named from the colors respectively worn) first attained any consequence; and though the first disturbance was terribly chastised by Belisarius, 532, they continued to distract the capital periodically till the 7th c. Justin II. (reigned 565–578), a weak man, governed by his wife, Sophia, yielded a part of Italy to the Longobards, was unsuccessful against the Persians, allowed the Avari to plunder the Danubian provinces, and ultimately became insane through vexation and anxiety. Tiberius, the captain of the guard, was then made regent, and after the death of Justin II., received the imperial dignity. He ruled with mildness and prudence (578–582), purchased a peace with the Avari, concluded the war with Persia, and left as his successor the commander-in-chief, Mauricius, who reigned 582–602. Having replaced on the throne the Persian king, Kosroes II., who had been banished by his subjects, he thus secured the peace of his eastern frontiers; but, on the other hand, the war against the Avari did not prosper. His niggardly treatment of the army caused a military insurrection, in which he was slain with his son; and Phocas, one of his generals, was elevated to the throne. Phocas proved a bad ruler. Through his monstrous vices, tyranny, and incapacity for government, the empire lapsed into still deeper anarchy. Suddenly, however, a deliverer appeared in the person of Heraclius (q.v.), son of the exarch or gov.gen. of Africa, who headed a conspiracy, marched to Constantinople, overthrew the tyrant, and ascended the throne, 610. But great as was the genius of Heraclius, he had to submit to 12 years of defeat before he could organize and discipline a victorious army. In 622, he opened those magnificent campaigns in which the power of Persia was crushed, and which, in the opinion of Gibbon, were equal to those of Scipio or Hannibal. He lived, however, to see more formidable foes in the Arabs, who, inspired by fanatic zeal, and led by the Caliph Omar, captured, 635–641, the countries on the Euphrates, with Syria, Judæa, and Egypt. The power of the Greeks, which was demanded to resist the Arabian invasions, was miserably divided and weakened by their unending religious quarrels, especially the controversy of the Orthodox against the Monothelites (q.v.). The empire was breaking asunder, and Heraclius, now worn out with the fatigues of war, had abandoned his enfeebled senses to pleasure, and his enfeebled intellect to metaphysical

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discussions of a theology without life. He died 641. Constantine III., who succeeded his father, Heraclius, also died soon after, and was followed by Heracleonas, who lost the crown, and was mutilated in an insurrection. The next ruler was Constans, son of Constantine III., who ruled 642-668, made himself odious by cruelty, and perished in an insurrection. His son, Constantine IV., Pogonatus (reigned 668-685), enforced a treaty of peace on the invading Arabs (675) by his successful use of the Greek fire in warfare. On the other side, he was compelled to pay tribute in 680 to the Bulgarians, who had established themselves in ancient Mœsia. Justinian II. (reigned 685-711), son and successor of Pogonatus, was victorious in war against the Monothelite Maronites, but was defeated by the Bulgarians (688), and by the Arabs (692). His cruelty caused an insurrection, at the head of which was Leontius, who, 695, deposed him, cut off his nose (hence his surname *Rhinotmetus*), and banished him to the Tauric Chersonese; in 705, he was restored to the throne, but adversity had taught him no wisdom. A part of his subjects revolted, and the king, abandoned by his army and by the Bulgarians, was assassinated 711. With him the dynasty of Heraclius expired.

Philippicus Bardanes (the leader of the last insurrection against Justinian II.) was next raised to the throne (711); but having made himself odious by favoring the metaphysical tenets of the Monothelites, he was deposed, and brutally deprived of eyesight (713). His successor, Anastasius II., prudently screened himself from a mutinous army by retiring into a monastery (716), and left the crown to Theodosius III., who abdicated 717, impelled by the fact that Leo, the Isaurian, gen. of the army of the East, did not recognize him, and marched with hostile intent to Constantinople. Leo (q.v.) himself ascended the throne, 717, and drove back the Arabs from Constantinople, but unhappily gave occasion, 726, for that contest concerning the worship of images, which rent the empire for more than a century. In 728, the exarchate of Ravenna was lost, and the eastern provinces became the prey of the Arabs, over whom, however, he won a great victory in Phrygia. He died 741. Constantine V. (reigned 741-775), son of Leo III., on account of his zeal as an iconoclast, was hated by the monks, who gave him the surname 'Copronymos,' because (according to their malicious and uncleanly statement) he had polluted the font at his baptism. He was a brave ruler, recovered from the Arabs parts of Syria and Armenia, and ultimately defeated the Bulgarians, against whom he had long been unsuccessful. His son, Leo IV. (reigned 775-780), was a mild ruler; but by the ability of his generals he made the boundaries of the empire secure against the Arabs. After him, Constantine VI. ascended the throne under the guardianship of his ambitious mother, Irene (q.v.), who raised a powerful party in favor of image-worship. Constantine having made an attempt to liberate himself from the influence of his mother and her paramour, Stauratius, Irene barbar-

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ously caused him, her own son, to be blinded (797). He died soon after this atrocity; and Irene, who had boldly conceived the design of marrying the Emperor Charlemagne, and thus uniting the east and west of Europe in one vast realm, excited the opposition which, 802, placed her treasurer, Nicephorus, on the throne. Irene was banished to Lesbos, where she died 803. Nicephorus, who fell in battle against the Bulgarians (811), was succeeded by his son, Stauratius, who soon yielded the throne to his brother-in-law, Michael I., from whom it was taken by the Armenian general, Leo V., a powerful ruler, who conquered the Bulgarians, but fell (820) in a conspiracy excited by his zeal against image-worship. Michael II., the Stammerer, was raised from a dungeon to the throne, and ruled till 829. In his reign, Crete and Sicily passed into the hands of the Arabs. Under the rule of his son, Theophilus, praised by the Byzantine historians for his love of justice (reigned 829-842), the general, Manuel, gained some indecisive victories over the Arabs. Theodora, widow of Theophilus, and guardian of Michael III. (reigned 842-867), brought the controversy about images to a close at the council of Nicæa (842), when the worship of these was fully sanctioned and reintroduced. During this reign, the government busied itself in the persecution of the Paulicians (q.v.), while the Arabs devastated the Asiatic provinces. Theodora, having been banished to a convent by her son, the government was for some time held by Bardas, uncle of Michael III., and after his assassination, by Basilus I., the Macedonian, who caused Michael to be put to death, and afterward ruled ably 867-886. Though on the whole Basilus was successful against the Arabs, the latter contrived to make themselves masters of Syracuse. His dynasty (the Macedonian) maintained itself on the Byzantine throne, with some few interruptions, until 1056. The reign of his son, Leo VI., the Philosopher (886-912), was not prosperous. The inroads of the Bulgarians and of the Arabs, who, 904, plundered Thessalonica, continued to increase during the government of his son, Constantine VII., Porphyrogenitus, who ruled mildly but feebly (912-959). Under his son, the dissolute Romanus II. (reigned 959-963), Crete was retaken from the Arabs by the vigor of his general, Nicephorus Phocas, who, on the death of the emperor, married his widow, Theophania. She, however, caused him to be murdered in 969, as she wished to marry John Tzimiskes, who ruled till 976, and, like his predecessor, was victorious against the Arabs and Bulgarians, as also against the Russians, who about this time began to emerge from obscurity as an enemy of the Byzantine power. His successor, Basilus II. (reigned 976-1025), son of Romanus, conquered the Bulgarian kingdom, and attached it as a province to the empire, which it remained till 1186, when it again became independent. His brother, Constantine VIII. (reigned 1025-1028), was of a different character. Romanus III. next ascended the throne, but was assassinated by his wife, Zoe, a profligate but crafty princess, who

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raised successively to the imperial dignity Michael IV. (1034), Michael V. (1041), and Constantine IX. (1042). Meanwhile, Russians and Arabs devastated the realm. In Asia, the Seljuk Turks proved dangerous enemies, while in Lower Italy the Normans narrowed the Byzantine power to the possession of Otranto. After Constantine's death, 1054, Theodora, sister of Zoe, was elected empress, and on her death, 1056, Michael VI. assumed power; he was deposed by Isaac I., Comnenus.

With Isaac I., Comnenus, who came to the throne 1057, the dynasty of the Comnenian emperors began. He retired to a monastery (1059), and was succeeded by Constantine X., whose widow, Eudocia, married Romanus IV. and raised him to the throne. Romanus was deposed 1071 by Michael VII. (son of Constantine X.), who, in his turn, was dethroned by Nicephorus III. (1078), who reigned till 1081, when he was deposed by Alexius I., Comnenus (q.v.), (reigned 1081-1118). This last reign was marked by the commencement of the Crusades. The successors of Alexius—his son, Kalo-Joannes (reigned 1118-43), and Manuel I. (reigned 1143-80)—were able rulers, and victorious in conflicts with the Turks. Manuel's son, Alexius II., was murdered by his guardian, Andronicus (grandson of Alexius I.), who raised himself to the throne. He was the last prince of the Comnenian dynasty, and fell in an insurrection excited by his own cruelty, 1185.

After the first turbulent reign of Isaac II., who was blinded and deposed by his brother, Alexius III., who took the surname of Comnenus 1195, the Crusaders restored Isaac to the throne (1203), and also crowned his son Alexius IV.; but the restless citizens of Constantinople elected Nicolas Kanabus, who took the title of Alexius V., and, pursuing the usual bloody course, put his predecessor to death.

In 1204, the French and the Venetians (collectively named *Latins*) advanced on Constantinople, and captured the city, April 12, having made themselves masters of the European provinces. The whole was divided into four parts, of which the first, including the metropolis, fell to the lot of Baldwin, Count of Flanders, who was made emperor, and to whom the other participants in the expedition did fealty for their respective shares. The Venetians obtained the coasts of the Adriatic and Ægean seas, a part of the Morea, and several islands; Bonifacius, Count of Montferrat, obtained Macedonia and part of Greece; several dukedoms, countships, etc., also were established at Athens, Philippopolis, and other places for French knights; while a number of Greek princes, both on the mainland and in the islands, maintained their independence. In the west of Asia Minor, Theodorus Lascaris, who had been elected emperor at Constantinople, formally transferred the seat of government to Nicæa; and finally, in the n.e. of Asia Minor, the governor of the province of Colchis, Alexius Comnenus, ruled at Trebizond with absolute authority; while one of his successors, John Comnenus, even assumed the title of em-

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peror. At Constantinople, neither Baldwin nor his successors could strengthen the sinking empire. Baldwin himself died (1206) a prisoner in the hands of the Bulgarians. After him came his brother Henry, who ruled bravely and wisely till 1216. For the next four years, the empire was actually without a ruler, and a prey to utter anarchy. In 1221, Robert, son of Peter, Count of Auxerre and Courtenay, came to the throne, and was succeeded by John of Brienne, titular king of Jerusalem (reigned 1228-37): and the latter by Baldwin II. (reigned 1237-61). During these reigns a great part of the empire was seized by John Vatazes, successor of Theodorus Lascaris of Nicæa (reigned 1222-55). This ruler was followed in Nicæa by Theodorus II. (reigned 1255-1259), whose son, Johannes, during his minority, was superseded by Michael VIII., Palæologus, who, by the help of the Genoese, captured Constantinople (1261, July 25), and thus put an end to the Latin dynasty; though some few Latin principalities maintained themselves till the fall of the Byzantine empire.

Michael, the first of the Palæologi, a powerful prince, really endeavored to strengthen the realm; but by his unhappy attempt to unite the Greek Church with the Latin, from which it had decisively separated (1054), he gave great offense to the clergy and the people. His son, Andronicus II., who came to the throne, 1282, re-established the Greek ritual. After the death of his son and coregent, Michael IX. (1320), Andronicus II. was compelled to divide the throne with his grandson, Andronicus III., who became sole emperor, 1328. This monarch unsuccessfully opposed the Turks, who took Nicæa and Nicomedia 1339, and wasted the European coasts. He died 1341. Under his son, Johannes V., the Turks first gained a firm footing in the European provinces, and spread themselves from Gallipoli (which they captured 1357) over other districts. Sultan Murad took Adrianople, 1361, and made it the seat of government. He and his follower, Bajazet, conquered all the Byzantine territories as far as Constantinople. Manuel II., son and successor of Johannes, was besieged in Constantinople by Bajazet, who defeated an army under Sigismund of Hungary, at Nicopolis, 1396, and compelled the Byzantine monarch to cede to the Turks one of the main streets of the city, which was saved from capture only by Timur's incursions into the Turkish territories, 1402. By this diversion Manuel recovered some portion of the Byzantine provinces; but made so little use of the occasion that, 1422, the metropolis was again besieged by Murad II., who, after he had overthrown the force sent to aid the emperor by Ladislaus, King of Hungary, at the battle of Varna, made Constantinople, in 1444, the limit of the domains of Johannes VI., son of Manuel, and compelled him to pay tribute. Constantine XI., brother of Johannes, bravely but fruitlessly contended against the overwhelming Turkish forces, and fell heroically in the defense of Constantinople, which was captured by Mohammed II., 1453, May 29, when the

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B. E. was brought to a close. The petty Latin princes here and there in Greece, and the despots, Demetrius and Thomas, who ruled in the Morea, were subdued by Mohammed 1460; while David, a member of the Comnenian dynasty, the last emperor of Trebizond, submitted 1461.

It has hitherto been usual for authors dealing with the bloody record of dynastic crimes in the B. E. to affirm that the history of the world never witnessed so degraded a caricature of imperial government. Against such summary statements Mr. Freeman and others energetically protest; declaring that careful study brings a fairer side into relief, and that, on the whole, the history of the fall of the B. E. is the record of a noble struggle against overwhelming odds. This opinion, if judged too favorable regarding the whole period of the B. E., may perhaps be justified in relation to the closing epoch of its history.

The constitution of the B. E. was founded on the institutions of Diocletian and Constantine the Great, and was purely despotic. The emperors, who were consecrated by the patriarchs of Constantinople, claimed, as the true descendants of the Cæsars, a sovereignty over the West as well as the East, and styled themselves 'rulers of the Romans,' even after Charlemagne had founded a new dynasty. Though great influence was at various times exercised by the clergy as well as by women, courtiers, and ministers, the emperors were pure autocrats, having supreme power in all departments of government, and being themselves superior to all laws. By pompous titles, by great splendor of costume, and by a strict observance of an elaborately minute court ceremonial, as well as by the cruel penalties inflicted for any insult offered to the imperial dignity, or to the dignity of the emperor's relatives, they kept themselves sacredly apart from the people. Gradually everything disappeared that might have been a check upon the utter despotism of the supreme power. As early as the 6th c., the consulate was absorbed in the mass of imperial honors, while the traces of the senate which Constantine had established at Byzantium, and which was composed of those on whom the emperor had bestowed the dignity of patriciate, as well as the chartered privileges of the towns, had entirely vanished in the 10th c. The privy council, to whom the conduct of the state was intrusted, was arbitrarily chosen by the emperor. The state-officials were very numerous, and their respective ranks carefully distinguished. They were raised far above the populace by titles and privileges, but were utterly dependent on the throne. Among these, the *Domestici* (including many eunuchs), claimed the highest rank as immediate attendants on the emperor. The rank of the *Curopolates*, who had charge of the four chief imperial palaces, became, in course of time, subordinate to that of the *Protovestiarius*, who was invested with the highest dignity of all. The *Domestici* were made commanders-in-chief of the army. Among them, the *Domesticus* of the East (styled, *par excellence*, *Megadomesticus*) held the highest rank, and finally, under the Palæologi, was considered

BYZANTINE HISTORIANS—BYZANTIUM.

the first civil and military officer of the realm. The provinces were ruled by governors bound to contribute certain sums to the royal revenue, which gave rise to oppressive exactions. No distinction was made between the state-revenue and the privy purse. For military service, the land was divided into districts (*Themata*); and the army, down to the later times, consisted almost entirely of foreign mercenary troops, the imperial body-guard, or *Spatharii*, mainly Germans, holding the highest rank. The admiral of the fleet was styled *Megas Dux*. In the midst of constant internal and external disturbances the administration of justice was grossly neglected and abused, though Justinian and other emperors earnestly endeavored to establish just laws. See BYZANTIUM: CONSTANTINOPLE.

BYZANTINE HISTORIANS: Greek writers who have dealt with the history of the Byzantine empire. They are divided into three classes—1. Those whose works refer exclusively to Byzantine history; 2. Those who professedly occupy themselves with universal history, but at the same time treat Byzantine history at disproportionate length; 3. Those who write on Byzantine customs, antiquities, architecture, etc. The B. H. are far from faultless, yet, as they are the only sources of information regarding the vast empire of the East, they are invaluable to us. The most interesting and instructive among them, however, are those who confine their attention to a limited number of years, and to the events which passed under their own observation, or in which they took part. The works of the principal B. H. were collected and published at Paris, 36 vols., with Latin translations under the editorship of P. Philippe Labbé, a Jesuit, and his successors (1648–1711). This magnificent collection was reprinted, with additions, at Venice, 1727–33. In 1828, Niebuhr, assisted by Bekker, the Dindorfs, and others, began a *Corpus Scriptorum Historiæ Byzantinæ*, carried on till 1855, and continued in 1872 by the *Bibliotheca Græca Medii Ævi*.

BYZANTINES, in Numismatics: coins of the Byzantine empire. Byzantine coins are of gold, silver, and bronze, bear impressions distinct from those of the earlier Roman coins, and were copied in several countries where the Byzantine standard was adopted. The commercial relations of the Eastern empire served to distribute its coinage over almost all the then known world. It was current in India, as well as in the n. of Europe. Recently an increased attention has been paid to the study of Byzantine coins as aids to history.—Saulcy, *Essai de Classification de Suites Monétaires Byzantines* (Metz, 1836). See **BEZANTS**.

BYZANTIUM, *bě-zăn'shĭ-ŭm*: city on the Thracian Bosphorus: founded by emigrants from Megara B.C. 667; rapidly rose to importance as a seat of commerce. Its position was at once secure and enchanting; it commanded the shores of Europe and Asia, had magnificent facilities for trade, and was encircled with rich, picturesque, and

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varied scenery. After a time of subjugation under Darius Hystaspes, B. was liberated from the Persian yoke by Pausanias. With other Grecian seaports, B. revolted from Athens B.C. 440, but was captured by Alcibiades, B.C. 408. Lysander recovered it for the Lacedæmonians 405. Shortly afterward it renewed its alliance with Athens, and in 390, Thrasybulus altered its form of government from an oligarchy into a democracy. When Athens again acquired dangerous importance as a naval power, B., B.C. 356, leagued itself with Chios, Rhodes, and King Mausolus II. of Caria, and crippled the trade of Athens; with which, however, it again formed an alliance, through the influence of Demosthenes, in opposition to Philip of Macedon, who, B.C. 341-340, vainly besieged Byzantium. Under Alexander the Great, B. retained a degree of independence. For some time, B. was tributary to the Gauls, who settled in Thrace, after the death of Brennus (B.C. 280). After the second Punic war, when the Romans began to interfere in the affairs of Grecian and Asiatic cities, B. attached itself to Rome, and, retaining almost entire its former liberties, maintained also its commercial importance. In the civil war between Septimius Severus and Pescennius Niger, B. sided with the latter. It was therefore besieged by Severus, and, after a brave defense of three years' duration, was captured A.D. 196 and reduced to ruin. Severus, repenting of the desolation which he had made, rebuilt a part of the city under the name of *Augusta Antonina*, and ornamented it with baths, porticos, etc. Caracalla restored to the inhabitants their ancient privileges; and, in 330, under the name of New Rome or Constantinople, it was made the metropolis of the Roman empire. See CONSTANTINOPLE: BYZANTINE EMPIRE.

C

C or **c**, *sê*: the third letter of the Eng. alphabet, and a consonant, has two sounds—(1) as *s* in *face*; and (2) as *k* in *zane*.

C is generally pronounced as *k* (1) when followed by one of the vowels *a*, *o*, *u*, as in 'cake,' 'becoming,' 'concuss'; (2) when followed by a consonant, except *h*, as in 'accord,' 'clime'; (3) when it terminates a word, as in 'physic,' 'music,' 'zinc.'

C is generally pronounced *s* when it comes before one of the vowels *e*, *i*, *y*, as in 'avarice,' 'cipher,' 'fancy.'

C is the third letter in all the alphabets derived from the Roman. It corresponds in place to the Greek gamma (*Γ*), and had originally the same sound—viz., that of *g* in *gun*; as is expressly recorded, and as is proved by very old inscriptions, on which we read *leciones*, *lece*, for what were afterward written *legiones*, *lege*. This medial or flat guttural sound of *c* was at an early period of Roman history lost in the sharp guttural or *k*-sound (see ALPHABET), and this continued to be the pronunciation of the letter *c* in Latin down at least to the 8th c. of the Christian era, not only in such words as *comes*, *clamo*, but also before the vowels *e* and *i*. Such Latin words as *Cicero*, *fecit*, are uniformly represented in Greek by *Kikero*, *phakit*; and in the times of the Empire the Germans borrowed *Kaiser*, *keller*, from *Cæsar*, *cellarium*.

It seems difficult, at first sight, to account for the same letter having sounds so different as those heard in *call* and in *civil*. The beginning of the transition is to be found in the effect produced upon certain consonants by their standing before *i* followed by a vowel. Thus, in *nation*, *ti* tends to, and practically reaches, the effect of *sh*; and out of *diurnal* has sprung *journal*. In such combinations, *i* is originally a semi-vowel having the force of *y*, and it is easy to see that *tyon*, *dyur*, pronounced in one syllable, cannot but slide toward or into the sibilant or hissing sounds of *shon*, *jur*. A similar effect is produced on the *k*-sound before *ia*, *iu*, *io*; in *Lucius*, *Porcia*, or rather *Lukyus*, *Porkya*; *ky* tends to slide into a hissing sound similar to that of *ty* and *dy*. This tendency showed itself early in the Latin tongue; and in the vulgar Latin of later ages, and in the Romanic tongues that sprang out of it it fully developed itself, so that the Italian came to pronounce *Lucia* as if written *Lutshia*. Combinations like *ceo*, *cea*, are little different from *cio* and *cia*, and would naturally follow the same course; and the *s* sound being once associated with the letter *c* in these positions, was gradually extended to it in cases where the *e* or *i* was not followed by a vowel.

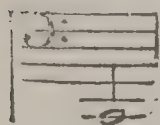
The Anglo-Saxon alphabet resembled the Roman, from which it sprang, in having no *k*, and in always using *c* with

the sound of *k*; *king* and *keen* were spelled *cyning* and *cene*. It was also without *q*, for which *cw* was used—*quick* being spelled *cwic*. By a process analogous to that described above, such Anglo-Saxon words as *ceorl*, *ceosan* (pro. *kyorl*, *kyosan*), became transformed into the English *churl*, *choose*. And this suggests a natural explanation of the multitude of cases where the *c* of the Latin has been transformed into *ch* in French, and has passed in this form into English—e. g., Lat. *caput*, Fr. *chef*, Eng. *chief*; Lat. *caminus*, Eng. *chimney*; Lat. *carmen*, Eng. *charm*. For as the Anglo-Saxons turned the *karl* or *korl* of the other Gothic nations into *kyorl*, so doubtless the Romanized Gauls corrupted the pronunciation of the Latin *camera*, for example, into *kyamera* (compare Eng. *cart*, pronounced by some *kyart*), which would then readily slide into *chambre*.

In the other Germanic alphabets, derived partly from the Roman and partly from the Greek, the Greek *kappa* or *k* is used almost to the exclusion of *c*, which, in German, Swedish, etc., appears only in words borrowed from the Romanic languages. See letter K.

In modern English, *c* is pronounced like *k* before the vowels *a*, *o*, *u*, and like *s* before *e*, *i*, and *y*; and where the sharp guttural sound has to be represented before *e*, *i*, and *y*, the Germanic *k* has superseded the Anglo-Saxon *c*, as in *king*, *keen*. So far as mere sound is concerned, *c* is a superfluous letter in English; in every case its power could be represented either by *k* or by *s*. In the corresponding words of the several Aryan languages, we find various substitutions for *c*, thus: Lat. *calamus*, Eng. *halm* (stalk), Rus. *soloma*; Lat. *cord-*, Eng. *heart*, Rus. *serdtse*; Lat. *col-um*, Ger. *hals* (neck); Lat. *acer* (sharp), Fr. *aigre*, Eng. *eager*; Lat. *duc-* (lead or draw), Ger. *zog*, Eng. *tug*; Gr. *pepo*, Lat. *coquo*, Eng. *cook*; Lat. *dictus*, Ital. *ditto*. *C* sometimes disappears before *l* and *r*; thus: Gr. *kleo* (to sound one's fame, allied to *kaleo*, to call or shout), Lat. *laudo*, to praise, Ger. *laut*, voice, Eng. *loud*, Old Ger. *hlud*, fame (hence Hludwig or Clodowig, Clovis, Louis).

C, in Music: one of the notes of the gamut. The scale of *C* major has neither flats nor sharps, and therefore is called the natural scale. The different octaves of the gamut, beginning with *C*, are called by the Germans the great, small, one-stroked, two-stroked, etc., beginning with



; thus, C, c, \bar{c} , $\bar{\bar{c}}$, $\bar{\bar{\bar{c}}}$.

C. is also the sound on which the system of music is founded, and from which the mathematical proportions of intervals are taken; that is, a string of a given length sounding *C*, when divided into certain proportions, is made to produce harmonically the intervals of the different fundamental chords.

C MAJOR: the first of the twelve major keys in modern music; being the natural scale, it has no signature.

C MINOR: the tonic minor of *C* major, has three flats for its signature—viz., B. flat, E. flat, and A. flat.

CAABA—CAAING WHALE.

CAABA, or KAABA, n. *kā'ā-bā* [Ar. *ka'bah*, a square building]: a black sacred stone in the temple at Mecca, said to have been given by an angel to Abraham; the temple itself: see KAABA.

CAAING WHALE, *kaw'ina whāl* (*Globicephalus deductor*): cetaceous animal, which has been generally included by naturalists in the genus *Delphinus* with dolphins (q.v.) and porpoises (q.v.), being named by some *Delphinus melas* [Gr. black], by others *D. globiceps*, from the round form of its head, but which has recently been separated from the true dolphins, either as a species of porpoise (*Phocæna*), or as the type of a distinct genus, *Globicephalus*, characterized principally by the rounded muzzle, and the convex and rounded top of the head. The general form of the animal is like that of the common porpoise, but it is much larger, being from 16 to 24 ft. in length. The body is thick, its circumference at the origin of the dorsal fin, where it is greatest, being rather more than 10 ft., tapering toward the tail, which is deeply forked. The pectoral fins



Caaing Whale.

are remarkably long and narrow, fully 5 ft. in length, differing very much in this respect from those of every known cetaceous animal. The whole number of vertebræ is 55. The color is black, with a white streak from the throat to the vent; and the skin is beautifully smooth, shining like oiled silk.

The C. W. feeds on cod, ling, and other large fishes, but also to a great extent on cephalopodous mollusca, the cuttle-fish, indeed, seeming to be its principal food. It is the most gregarious of all the *Cetacea*, great shoals or herds being usually seen together in the northern seas which it inhabits. These herds exhibit the same propensity with flocks of sheep, when pressed by any danger, to follow their leaders, so that when they are hemmed in by boats, if one break through to the open sea, all escape; but if one is driven ashore, the rest rush forward with such blind

CAB—CABALLERO.

impetuosity as to strand themselves upon the beach, where they become an easy prey and rich prize to their pursuers. The appearance of a herd of caaing whales in a northern bay produces a scene of great excitement, and every boat is in requisition. From a single herd 50 to 100 whales are often captured, and it is recorded that 1,110 were killed, in the winter of 1809–10, at Hvalfiord, Iceland. The word *caaing* is not the Scottish form of *calling*, as has been supposed, but is a totally different Scotch word, which signifies *driving*. C. W. appears to be originally an Orkney or Zetland name. The same animal is known to sailors as the Black Whale, the Howling Whale, the Social Whale, and the Pilot-fish.—Another species of the same genus, *G. Rissoanus*, 9 or 10 ft. long, the male of a bluish-white color, the female brown, both sexes marked with irregular white lines and brown spots, is found in the Mediterranean.

CAB, n. *kāb* [Heb. *qabab*, to hollow]: in *Eastern countries*, a measure for dry goods.

CAB, n. *kāb* [contraction for *cabriolet*]: a one horse coach. CAB'MAN, n. the driver of a cab. CAB'STAND, n.

CABAGAN, *kā-bā-gān'*: thriving town, at the northern extremity of the island of Luzon, one of the Philippines. Pop. upward of 11,000.

CABAL, n. *kā-bāl'* [F. *cabale*, a club, a party (see CAB-ALA)]: a few men united secretly for some party purpose agreeing for political or personal ends to modify or sacrifice their principles, a junto: V. to design secretly; to intrigue. CABAL'LING, imp. CABALLED', pp. *-bāld'*. CABAL'LER, n. one who. *Note*.—In its modern sense of 'political intrigue or plotting,' *cabal* was used first in the reign of Charles II. in 1671, when, by 'a whimsical coincidence,' it was found to be formed by the initial letters of the names of the members of the cabinet—Clifford, Arlington, Buckingham, Ashley, and Lauderdale.—SYN. of 'cabal, n.': conspiracy; combination; plot; faction; junto; intrigue.

CABALA, n. *kāb'ā-lā*, or CAB'AL, n. sometimes CAB'ALISM, n. [Heb. *qabbālāh*, tradition, mysterious doctrine]: among the Jews, certain unwritten principles of interpretation of the law having supposed mysterious and magical powers; a secret science or knowledge which the Jewish rabbins alleged they possessed, and by which they professed to be able to explain all Scripture difficulties, as by the combination of particular words, letters, and numbers found in Scripture; a secret or mystic study. CAB'ALIST, n. *-list*, one skilled in the secrets of the cabala. CAB'ALIS'TIC, a. *-tīk*, or CAB'ALIS'TICAL, a. *-tī-kāl*, having a secret meaning. CAB'ALIS'TICALLY, ad. *-lī*; also spelled CABBALA (q.v.).

CABALLERO, *kā-vāl-yā'ro*, FERNAN: pen name of Doña Cecilia Arron, otherwise known as Cecilia de Baer: Spanish novelist; abt. 1799–1877, Apr. 7: b. Cadiz; dau. of Bohl de Faber, long German consul there. She married, first, an officer of artillery; second, the Marquis de Arco Hermos, third, Don Antonio Arron, at one time Spanish consul in Australia. She lived mostly in Andalusia, to which she

CABALLINE—CABAZERA.

was devotedly attached, and rendered great service to Spanish literature by her tales, which are marked by 'insight into the hearts of the people, and conscientious and artistic reproduction of the national life.' Some of them have been translated into every European language: the one best known in America is probably *La Gaviota*, or *The Sea-gull*. Her views were ultramontane and anti-republican to the last degree; 'she could not pardon anything done since the days of the Inquisition.' Mérimée called her 'the Spanish Sterne,' and Gustave Hubbard 'a female Chateaubriand.' She died at Seville.

CABALLINE, a. *kăb'ăl-tîn* [L. *caballus*, an inferior riding or pack horse: Gr. *kaballes*: It. *cavallo*: F. *cheval*]: pertaining to a horse: N. a coarse variety of aloes used as a medicine for horses.

CABANIS, *kâ-bâ-nēs'*, **PIERRE JEAN GEORGES**: 1757-1808, May 5; b. Cosnac, dept. of the Charente-Inférieure, France: Physician, philosophical writer, and partisan of Mirabeau in the Revolution. When he had completed his studies in Paris (1773) he went to Warsaw as sec. to a Polish magnate. On his return to Paris he engaged in literary pursuits, from which he turned to an earnest study of medicine. At the outbreak of the Revolution he attached himself to the liberal side, but detested the cruelties which followed. For Mirabeau, whose opinions he received, he wrote a work on national education, published after the death of that great orator (1791). C. was one of the Council of Five Hundred, afterward member of the senate, and administrator of the hospitals of Paris. His chief work, *Rapports du Physique et du Moral de l'Homme*, completed in 1802, gained its author considerable reputation as a writer and philosopher. The work shows power of observation and analysis, but is characterized by a sensationalism so absolute that it seems at first sight as if the author were burlesquing with grave irony the doctrines of his brother-materialists. He denies that the soul is an entity; it is only a faculty; and declares the brain to be merely a particular organ specially fitted to produce thought, as the stomach and the intestines perform the function of digestion. C. traces this grotesque analogy through all its niceties, and at last triumphantly concludes 'that the brain digests impressions and organically secretes thought!'

CABARET, n. *kăb'ă-rět* [F.]: a house where liquors are retailed; a tavern.

CABATUAN, *kâ-bâ-tô-ân'*: city of the province of Iloilo, on the island of Panay, one of the Philippines. It is on the banks of the river Tiguin, which so abounds with crocodiles that fishing is unsafe. Navigation is very uncertain, the river being sometimes nearly dry, while at others it overflows its banks, and deluges the surrounding country. The city was founded 1732. The people are engaged chiefly in the production of rice, and of cocoa-nut oil. Pop. 23,000.

CABAZERA, *kâ-bâ-ză'rá*: capital of the province of Cagayan, island of Luzon, Philippines. Tobacco is grown

CABBAGE.

extensively in the province, and its manufacture affords employment to large numbers of people. Pop. 15,000.

CABBAGE, n. *kāib' bāj* [OF. *cabus* or *cabuce*, roundheaded: F. *caboche*; It. *capo*; old Sp. *cabo*, a head—from L. *caput*, the head]: a well-known vegetable; the *Brassica olerācēa*, ord. *Crucifēræ*: V. to grow as to form a head. **CAB'BAGE-TREE**, n. a species of palm-tree, whose terminal buds are eaten like cabbage; the *Arēā olerācēa*, and also *Euter'pè montāna*, ord. *Palmæ*; the *Audīra īner'mis*, producing the 'worm-bark,' ord. *Legumīnōsæ*.

CABBAGE, v. *kāib' bāj* [F. *cabas*; Dut. *kabas*; Sp. *capacho*, a frail, a rush-basket: Dut. *kabassen*, to pilfer: comp. Gael. *cabaich*, to notch or indent]: to retain part of an article; to pilfer: N. any part of a thing retained unjustly. **CAB'BAGING**, imp. **CAB'BAGED**, pp. *-bāj'd*.

CABBAGE (*Brassica oleracea*: see **BRASSICA**): a plant in general cultivation for culinary purposes in Europe and other countries, cultivated to a considerable extent also for feeding cattle. It is a native of the rocky shores of parts of Europe, more plentiful on the shores of the Mediterranean than in more northern latitudes, and in its wild state is generally from a foot to two ft. high. This plant has been cultivated in Europe and in India from time immemorial; it has likewise been cultivated from an early period in gardens and about villages in India. Few plants show so great a tendency to vary in their form through cultivation; and among the varieties of this one species are reckoned several most esteemed culinary vegetables, such as Kale (q.v.) or Greens, Borecole, Colewort (q.v.), Savoy (q.v.), Kohl Rabi (q.v.), Cauliflower (q.v.), and Broccoli (q.v.).—plants which in their appearance and in the particular qualities for which they are valuable, differ greatly both from each other and from the original wild plant.

The wild C. has smooth sea-green leaves, waved and variously indented; the bolting of the leaves, or their forming close heads at a certain stage of the growth of the plant, so that the inner leaves are blanched, is peculiar to those cultivated varieties which commonly receive the name of cabbage.

The ordinary varieties of C. are often called by the general name of *White C.*, to distinguish them from the *Red C.*, which is of a deep brownish-red or purplish color, and is chiefly used for pickling, for which purpose it is much esteemed. The *Tree C.*, or *Cow C.*, is a variety cultivated for cattle, especially in the Channel Islands and the n. of France, of which the leaves do not close together into compact heads, but which is remarkable for its great height—reaching, when it is in flower, ten ft. on rich soils—and for its branching stem. The stems of this kind are sometimes used as stakes for pease, and even as cross-spars for thatched roofs. The *Portugal* or *Tranxuda C.*, also known as *Couve Tronckuda*, is a variety remarkable for its delicacy, and for the large midribs of its leaves, often used like sea-kale. It is an article of luxury like cauliflower, and requires somewhat similar cultivation.—

CABBAGE BARK—CABBAGE BUTTERFLY.

C.-seed is sown either in spring or autumn, and the seedlings transplanted in rows at distances of two ft. or upward, according to the size of the variety. They are often planted closer, and the alternate plants cut young for open greens, for which the sprouts that arise from the stem of some varieties after the head has been cut off are also used. Cabbages require a rich, well-manured soil, and the earth about the roots ought to be often stirred. By sowing and planting at different dates and of different varieties, a succession is secured in the garden; and when winter approaches, part of the principal crop may be taken up and laid in a sloping position, so that only the heads are above the earth, in which way they are generally preserved without injury. In some places, cabbages are completely buried in the earth, the plants not being allowed to touch each other; and this method succeeds in peaty or sandy soils.

The C., considered as food, contains more than 90 per cent. of water, and therefore cannot be very nutritious; 100 parts of the ordinary C. consist of—

Extractive.....	2.34
Gummy matters	2.89
Resin.....	0.05
Vegetable albumen.....	0.29
Green fecula	0.63
Water and salts.....	93.80

The digestibility of C. varies according as it is partaken of raw or boiled; thus, raw C. alone is digested in $2\frac{1}{2}$ hours; raw C. with vinegar, in 2 hours; and boiled C. takes $4\frac{1}{2}$ hours. Immense quantities of cabbages are used in Germany as *Sauer Kraut* (q.v.).

CABBAGE BARK: see ANDIRA.

CABBAGE BUTTERFLY: name common to several species of butterfly, the larvæ of which devour the leaves of cruciferous plants, especially of the cabbage tribe, and are popularly known as cabbage-worms or kale-worms. The LARGE C. B., or Large White Garden Butterfly (*Pontia Brassicæ*, or *Pieris Brassicæ*), is one of the most common of British butterflies. It is white; the wings tipped and spotted with black. The wings, when expanded, measure from $2\frac{1}{2}$ to 3 inches across. The antennæ terminate in an ovoid club. The female lays her eggs, which are conical and bright yellow, in clusters of 20 or 30, on the leaves of the plants which are the destined food of the caterpillars. The caterpillars, when fully grown, are about 1 inch or $1\frac{1}{2}$ inches long, and are excessively voracious, eating twice their own weight of cabbage-leaf in 24 hours. When fullgrown, they suspend themselves by their tails, often under ledges of garden-walls, or similar projections, and are metamorphosed into shining pale-green chrysalids, spotted with black, from which the perfect insect emerges, either in the same season or after the lapse of a winter—no longer to devour cabbage-leaves, but to subsist delicately upon honey, which it sucks from flowers. See INSECTS.—The SMALL C. B., or Small Garden White Butterfly, sometimes called the TURNIP BUT-

CABBAGE FLY—CABBALA.

TERFLY (*Pontia* or *Pieris Rapæ*), very much resembles the Large C. B., but the expanse of the wings is only about 2 inches. The eggs are laid singly on the under side of the leaves of cabbages, turnips, etc., and the caterpillars, which are of a velvety appearance, pale green, with a yellow line along the back, and a yellow dotted line on each side, sometimes appear in great numbers, and prove very destructive. They bore into the hearts of cabbages, instead of merely stripping the leaves, like those of the last species, and thus are a greater pest, even when comparatively few. The chrysalis is of a pale reddish-brown color, freckled with black.—A third species, also common in Britain, the **GREEN-VEINED WHITE BUTTERFLY** (*Pontia* or *Pieris Napi*), very nearly resembles the small cabbage butterfly.—The excessive multiplication of these insects is generally prevented by small birds, which devour them and their caterpillars, and by insects of the *Ichneumon* (q.v.) tribe, which lay their eggs in the caterpillars, that their own larvæ may feed on them.

CABBAGE FLY (*Anthomyia Brassicæ*): of the same family with the house-fly, flesh-fly, etc., and of which the larvæ or maggots often do great injury to the roots of cabbages, and sometimes to those of turnips. It is of the same genus with the fly generally known as the Turnip Fly (q.v.), and also with the Potato Fly (q.v.), Beet Fly (q.v.), etc. It is about one-fourth of an inch in length, and half an inch in expanse of wings; of an ash-gray color; the male having a silvery-gray face, and a long black streak on the forehead; the female, a silvery-white face, without any black streak; the abdomen of the male is linear, that of the female terminates conically; the eyes of the male nearly meet on the crown, those of the female are distant, with a broad black stripe between them. The larva is very similar to that of the flesh-fly—yellowish white, tapering to the head, which has two black hooks. The pupa is rust-colored and horny.

CABBAGE MOTH (*Mamestra* or *Noctua Brassicæ*): species of moth, the caterpillar of which feeds on cabbage and turnip leaves, and is sometimes very destructive. The caterpillar is greenish-black, and changes to a brown pupa in autumn. The perfect insect is of a rich mottled-brown color, the upper wings clouded and waved with darker brown, and having pale and white spots, a yellowish line near the fringe, the fringe dotted with black and ochre, the under wings brownish and white.

CABBAGE PALM, or **CABBAGE TREE**: name given in different countries to different species of palm, the great terminal bud of which—the Palm Cabbage—is eaten like cabbage. The C. P. of the West Indies is *Areca oleracea*. The southern states of America have also their C. P. or Cabbage Tree, otherwise called the Palmetto (*Chamærops Palmetto*). See **ARECA**: **EUTERPE**: **PALM**: **PALMETTO**.

CABBALA, or **CABALA** (q.v.), *kāb'a-la* [from Heb. *kibbel*, to receive]: the received doctrine, by which is not to be understood the popularly-accepted doctrine, but that

CABBLING—CABENDA.

inner or mystical interpretation of the Law which the Cabbalists allege that Moses received from God in the mount, and subsequently taught to Joshua, who in his turn communicated it to the seventy elders, and which has ever since been the treasure of the select Jews. Since the 12th c., the study of this secret lore has gradually resulted in a distinct school and literature, the elements of which, however, were already visible in the Macedonian epoch, and the real or historical source of which is to be found in the eastern doctrine of emanation. In Philo, in the Talmud, etc., we certainly find theologico-philosophical conceptions, which were at a later period taken up and modified; but the first book on cosmogony is *Jezirah*, a production of the 7th c., attributed to Akiba. After the second half of the 12th c., the Cabbalistic doctrines, which had at first been confined to such high themes as God and creation, began to include exegesis, ethics, and philosophy, and so became a kind of mystical religious philosophy. The numerous cabbalistic writings composed during the three subsequent centuries, professed to teach the secret or mystical sense of Holy Writ, and the principles on which it is grounded, the higher meaning of the Law, as well as the method of performing miracles, by the use of divine names and sacred incantations. The Cabbalists, moreover, prepared books, which they attributed to the oldest authorities—for instance, *Sohar*, a work written in Aramaic, during the 13th c., and fathered upon Simeon-ben-Joachai, a scholar of Akiba. This became the Bible of the Cabbalistic neophytes. The chief opponents of the Cabbalists were the philosophers, and in part the Talmudists. Toward the close of the 16th c., the Cabbalistic wisdom, which by that time had degenerated into magic and word-juggling, received a new impulse from its teachers in Palestine and Italy. Since the time of Reuchlin, many Christian scholars have investigated the subject.

CABBLING, *n. kăb'blîng*: the breaking up of puddled iron into small pieces, which are reheated and then wrought into bar-iron.

CABECA DE VACA: See **NUÑEZ ALVAR**.

CABEIRI, *ka-bî'rî*: divinities anciently worshipped in Egypt, Phœnicia, Asia Minor, and Greece. The ancients have left very obscure notices of the C., and learned men have been unable to reach satisfactory conclusions with regard to them and their worship. It is certain that the worship had both its mysteries and its orgies, and it appears also that the C. were among the inferior divinities, and regarded as dwelling upon the earth, like the Curetes, Corybantes, and Dactyles, and were probably representatives of the powers of nature.

CABENDA, *kâ-bĕn'dâ*, or **KABINDA**, *kâ-bĭn'dâ*: seaport town of w. Africa, in Lower Guinea, on the right bank of the Bele, 40 m. n. of the mouth of the Zaire; lat 5° 33' s., long. 15° 40' e. Having a good harbor, a fine situation, and a fertile soil, it has been called the paradise of the coast. It has considerable trade. Pop. abt. 16,000.

CABER—CABIN.

CABER, or **CABAR**, n. *kā'ber* [W. *keibr*, a rafter: Gael. *cabar*, a rafter, an antler]: in *Scot.*, a rafter; a large, strong pole, or trunk of a tree, in Highland games thrown in feats of strength.

CABES, *kā'bes* or **KHABS**, *kābs*, **GULF OF** (ancient *Syrtis Minor*): see **SYRTIS**.

CABET, *ka-ba'*, **ÉTIENNE**: 1798, Jan. 2—1856, Dec. 9; b. Dijon: French communist. He was educated for the bar, but turned to literature and politics. Under the Restoration, he was one of the leaders of the Carbonari (q. v.), and in 1831 was elected deputy for the dept. of Côte d'Or. Soon afterward he published a *History of the July Revolution* (1832), started a Radical Sunday paper, *Le Populaire* (1833), and, on account of an article in this paper, was sentenced to two years' imprisonment, but escaped to London. Here he wrote brochures against the July government, and began his communistic studies. After the amnesty, 1839, he returned to Paris, and published a *History of the French Revolution* (4 vols., 1840), bestowing great praise on the old Jacobins. He attracted far more notice by his *Voyage en Icarie* (1840), a 'philosophical and social romance,' describing a communistic Utopia. The work though shallow in thought and poor in style, obtained great popularity among the working classes of Paris. C. next proceeded to turn his 'philosophical romance' into a reality, and published (1847) in his journal, *Le Populaire*, the statutes for the formation of an 'Icarian colony' on the Red river in Texas, inviting his followers to emigrate. The first division sailed 1848, Feb. 2, but a short experience convinced them that Texas was anything but a Utopia. Their complaints did not deter C. from embarking at the head of a second band of colonists. On his arrival, he learned that the Mormons had just been expelled from Nauvoo, Ill., and that the place was deserted. The Icarians established themselves there 1850, May. C. governed, as a dictator, his petty colony till 1856, when he was deprived of his office, and obliged to flee to St. Louis, where he died.

CABEZA DEL BUEY, *kā-bā'thā dēl bó-ā'*: town of the new province of Badajoz, Spain, about 86 m. e.s.e. of the city of Badajoz; on the n. slope of the Sierra el Pedrose. It has manufactures of woollens and linens, and a trade in cattle and agricultural produce. Pop. 5,395.

CABEZON DE LA SAL, *kā-bā-thōn' dē lá sāl*: town of Spain, province of Valladolid, about 7 m. n.n.e. of the city of Valladolid. It is on the Pisuerga, and is notable as the scene of one of the first battles of the Peninsular campaign, in which the Spaniards were signally defeated by the French. Pop. 2,000.

CABIN, n. *kāb'in* [F. *cabane*—from mid. L. *capanna* and *cabanna*, a little hut: It. *capanna*, a shed or hovel: W. *caban*, a booth or hut]: a small room or inclosure; a shed or hut; a small cottage or house; a small apartment in a ship: V. to confine in a cabin. **CABINING**, imp. **CABINED**, pp. *kāb'ind*. **CABIN-BOY**, a boy who waits on the passengers

CABIN—CABLE.

and officers of a ship. **CABINET**, *n.* *kāb'ī-nēt*, a small hut or tent; a small private room or closet; the ministers of a sovereign, so called because they originally met in a small room or cabinet; the executive government of a country; a piece of furniture containing boxes and drawers: **ADJ.** pertaining to. **CABINET COUNCIL**, a confidential meeting of a sovereign's advisers. **CABINET-MINISTERS**, the highest officers of state in whom is vested the administration of the government of the country. **CABINET-MAKER**, a man who makes articles of household furniture.

CABIN, *kāb'in*: general name for an apartment on ship-board. In ships of war, the living-rooms of the admirals and captains are called 'state' cabins, and are fitted up with much elegance, with a gallery or balcony projecting at the stern. The chief officers below the captain have their cabins on either side of the main deck; while those of the subordinate commissioned officers are, in large ships, on either side of the lower or orlop deck. The cabins of a ship of war are usually inclosed by light panelling quickly removable when preparing for action.

CABINET, *kāb'ī-nēt* [*Ital. gabinetto*]: a small chamber set apart for some special purpose, such as the conservation of works of art, antiquities, specimens of natural objects, models, and the like. From signifying the chamber in which such collections are contained, the term *C.* has recently come to be employed by us, in imitation of the French, to signify the collections themselves, and this even when they fill many rooms or galleries. It often means simply a small room appended to a larger one, when it is also called an anteroom, a retiring-room, and the like. See **CLOSET**.—**CABINET PICTURE**, a picture suited for a cabinet or small room. *C.* pictures are generally small in size, highly finished, and thus suited for close inspection.

CABINET, in Political Affairs: see **MINISTRY**.

CABIRI: see **CABEIRI**.

CABLE, *n.* *kā'bl* [*F. câble*—from mid. *L. caplum*, a cord, a cable—from *L. capere*, to take hold of: *Icel. kadal*; *Ar. habl*, a rope]: a rope or chain of various degrees of thickness, used in ships; a submarine telegraph wire and its sheath: **V.** to send a message by the telegraphic cable or wire, as to England. **CABLING**, *imp.* *kā'blīng*. **CABLED**, *pp.* *kā'blēd*: **ADJ.** fastened with a strong rope. **CA'BLET**, *n.* *-blēt*, a small cable. **CABLE-MOLDINGS**, also **CABLINGS**, *n. plu.* *kā'blīngz*, in *arch.*, wreathed moldings resembling the twisted strands of a rope—much used in the later Norman style. **CA'BLING**, molding by which the hollow parts in the flutes of columns and pilasters in classical architecture are often partially filled. The cabling seldom extends beyond the third part of the shaft from the ground. **STREAM-CABLE**, a hawser or rope which moors a ship in a sheltered place. **A CABLE'S-LENGTH**, 720 feet. **TO PAY OUT A CABLE**, to cause a cable to run out of a ship. **TO SLIP THE CABLE**, to loosen it so that it may run out.

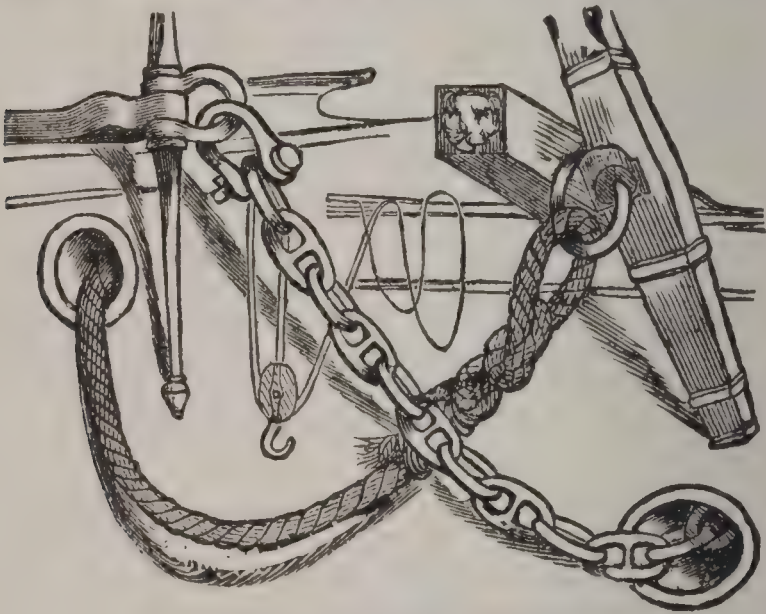
CA'BLE: either a large rope, or a chain of iron links, used chiefly on shipboard to suspend and retain the as-

CABLE.

chors. Rope cables are made of the best hemp, twisted into a mass of great compactness and strength. The circumference varies from about 3 inches to 26. A certain number of yarns are twisted to form a *lissum*; three lissums are twisted in an opposite direction to form a *strand*; and three strands are twisted (in the same direction as the yarns in a lissum) to form a *cable*. The number of yarns in a C. of given size is not always alike, because the yarns slightly vary in thickness; but the following is one among many tables which have been prepared relating to cables of 120 fathoms, and of the usual degrees of thickness:

Inches. Circumference.	Yarns.	Lbs.
3	= 48	= 192
6	= 174	= 696
9	= 393	= 1572
12	= 699	= 2796
15	= 1093	= 4372
18	= 1574	= 6296
20	= 1943	= 7772

Some cables are made with four strands, but three is usual. If a C. be twisted too much, it is stiff; if too little, it is weak. The strength of a C. of 18 inches' circumfer-



Chain and Hemp Cables.

ence is found to be about 60 tons; and for other dimensions, the strength varies according to the cube of the diameter. On shipboard cables receive the names of *chief* cables, *bower* cables, etc., according to the anchor to which they are attached. During the great war ending 1815, the largest ships in the British navy carried ten cables, most of which were about two ft., or a little more, in circumference. Although ships seldom anchor at a greater depth than 40 fathoms, it is not deemed safe to trust the anchor to one C. of the usual length; two are spliced together at the ends. The hempen cables now made are generally 101 fathoms; but 100 fathoms in practical seamanship denotes 'a cable's length,' and is really the length of a chain cable.

CHAIN CABLES are made of links, the length of each of

CABLEGRAM—CABOT.

which is generally about six diameters of the iron of which it is made, and the breadth about three and a half diameters. Chain cables should have preferably one swivel in the middle of every alternate length, and one joining-shackle in each length. The stay-pins, to strengthen the links, are of cast-iron. The bar or rod from which each link is made has the two ends cut diagonally; it is bent into a nearly oval form; and then the two ends are joined and welded, the stay-pin being at the same time introduced at the proper place. Besides the ordinary links, there are end-links, joining-shackles, splicing-tails, mooring-swivels, and bending-swivels. The sizes of chain cables are denoted by the thickness of the rod-iron selected for the links. The following table gives certain ascertained quantities concerning the cables in ordinary use:

Thickness of Iron.	Weight of Stay-pin.	Weight per Fathom.	Breaking Strain.
$\frac{1}{2}$ inch.	$\frac{1}{2}$ oz.	$13\frac{1}{2}$ lbs.	6 tons.
1 "	$3\frac{1}{2}$ "	54 "	24 "
$1\frac{1}{2}$ "	12 "	121 "	60 "
2 "	28 "	215 "	99 "
$2\frac{1}{2}$ "	40 "	272 "	126 "

CABLEGRAM, n. *kā'bl-grām* [Eng. *cable*; and Gr. *gramma*, a letter]: (colloq.) a message by means of electricity sent along a submarine telegraphic cable or wire; a telegram.

CABOCHED, a. *kă-bōsht'*, or **CABOSSED**, a. *kă-bōst'* [F. *caboche*, head—from mid. L. *cabo*—from L. *caput*, head]: in *her.*, having the head of a beast with a full-faced view, and nothing of the neck seen.

CABOCLE, n. *kăb'ō-kl*: in *Brazil*, a compact brick-red mineral, resembling jasper.

CABOOK, n. *kă-būk'* [native name for the *laterite* of India]: a brick-red clayey deposit prevailing over the greater part of India.

CABOOSE, n. *kă-bōs'*, or **CAMBOOSE**, *kăm-bōs'* [Dut. *kombuis* and *kabuis*; Dan. *kabys*; Sw. *kabysa*, a cook's room in a ship]: kitchen or cook-room in a merchant-ship; now usually called a *galley*. In coasting-vessels the term is applied to a portable cast-iron stove on the deck, where food is cooked.

CABOT, *kăb'ot*, **GEORGE**: 1752, Dec. 3—1823, April 18, b. Salem, Mass.: shipmaster, afterward merchant. In the Massachusetts provincial assembly he resisted an attempt to fix a maximum price for provisions. He was a member of the state constitutional convention, and of that which ratified the federal constitution; U. S. senator 1790–96; a federalist and friend of Washington and Hamilton. Appointed first sec. of the navy, 1798, May 3, he declined. He was a member of the Mass. Council, 1808, and pres. of the Hartford Convention, 1814. He died in Boston.

CABOT, *kăb'ot*, or **GABOTTO**, *gă-bot'to*, **GIOVANNI**: Venetian navigator and discoverer: said by Harris (Monograph, Paris, 1884) to have been b. at Genoa, and naturalized at Venice, 1476, having resided there since 1461; d. probably abt. 1500. His business compelled him to reside much in

CABOT—CABRAL.

Bristol, England; and he was appointed by Henry VII., 1496, Mar. 5, to the command of a squadron of five vessels on a voyage of discovery in the Atlantic. In this expedition he was accompanied by his sons Ludovico, Sebastiano, and Sanzio. The coast of Labrador was sighted, 1497, June 24. The merit of this discovery has been generally ascribed to the navigator's second son, Sebastian C., the most scientific of the family; but an extract from a chart preserved by Hakluyt mentions the father before the son. The expedition returned, 1497, Aug. In 1498, a second was made, with results unknown; and in 1499, a third to the Gulf of Mexico. About this time C. appears to have died.

CABOT, or GABOTTO, SEBASTIAN: navigator and discoverer: b. prob. 1477—d. prob. 1557; b. Bristol, England [Harrisse (Monograph) says Venice, but perhaps brought up at Bristol]; second son of Giovanni C. After three voyages with his father and brothers, nothing is heard of C. till 1512, when he entered the service of Ferdinand, King of Spain. During 1515 he was engaged in revising maps and charts, in connection with his profession, and in planning an exploration of the N. W. Passage to Asia, which, however, was laid aside on account of the death of Ferdinand, 1516. C., who seems to have been no favorite with the Spanish courtiers, was now subjected to a series of contemptible insults. This usage induced him to return to England, and in 1517 he was appointed by Henry VIII. to the command of an expedition to Labrador. He reached lat. $67\frac{1}{2}^{\circ}$ n., and entered Hudson's Bay, where he gave names to several places; but the expedition proved on the whole a failure, through the cowardice or malice of his vice-commandant, Sir Thomas Perte. C. now entered again into the Spanish service, was made pilot-major of the kingdom by Charles V., and commanded an expedition which examined the coast of Brazil and La Plata, which he attempted to colonize. In 1531, he returned to Spain, and resumed his old situation; but, 1548, he once more betook himself to England, where he was well received by King Edward VI., who made him inspector of the navy, and gave him a pension. To this monarch he seems to have explained the variation of the magnetic needle in several places, which he was among the first, if not the very first, to notice particularly. In 1553, C. was the prime mover and director of the expedition of Merchant Adventurers which opened to England an important commerce with Russia. He seems to have died in London. See Biddle's Memoir (1831). Desimoni (in his work, 1881) asserts that Sebastian C. discovered the continent of America at least a year before Columbus saw it.

CABOTVILLE, Mass.: see CHICOPEE.

CABOTZ: see CUSO.

CABRA, *ká'brá* (ancient *Ægabrum*): town of Spain, province of Cordova, 30 m. s.e. of the city of Cordova. Pop. 14,000.

CABRAL, *ká-brál'*, FRANCISCO: 1528–1609, Apr. 16; b.

CABRAL—CABRERA.

Covilhao, Portugal: Rom. Cath. missionary. He became a Jesuit, 1554; was sent to India and made prof. of philosophy and theology at Goa, and superior of the schools of his order; went eastward; made many converts in Japan, and directed the missions in China; returned to Goa, and controlled the Rom. Cath. schools there for 38 years. He had great zeal and devotedness in his work. His letters are preserved in the Jesuit *Literæ Annuæ*.

CABRAL, *ká-brál'* or CABRERA, *ká-brá'rá*, PEDRO ALVAREZ: discoverer of Brazil, 1500, Apr. 24: descended from an old patrician Portuguese family. After the first voyage of Vasco de Gama, the king appointed C. to the command of a fleet of 13 vessels, carrying 1,200 men, and bound for the East Indies. He sailed from Lisbon, 1500, Mar. 9. To avoid the inconvenience of being becalmed on the coast of Africa, he took a course too far westerly, fell into the S. American current of the Atlantic, and was carried to the unknown coast of Brazil, of which he claimed possession for the king of Portugal, 1500, Apr. 24, naming the new country 'Terra da Santa Cruz.' After sending home one vessel to bear news of this great accidental discovery, C. sailed for India; but on May 29, four of his vessels foundered, and all on board perished, including Diaz, the great navigator; and soon afterward three more vessels were lost. C. therefore landed at Mozambique, on the e. coast of Africa, of which he first gave clear information, and also discovered (Aug. 23) the Antschedives Islands, whose position he described correctly. Hence he sailed to *Culicut*, where, having made the terror of his arms felt, he was permitted to found a factory; entered into successful negotiations with native rulers, and thus established the first commercial treaty between Portugal and India. He returned from India, bringing with him considerable booty, and arrived in the port of Lisbon, 1501, July 31. It appears probable that the king was dissatisfied with the results of the expedition (although it had annexed Brazil to the crown of Portugal), for subsequently no mention is recorded of C. among other discoverers. At the request of C., Sancho de Toar wrote a description of the coast of Sofola. C.'s voyages are described in Ramusio's *Navigazione e Viaggi*, 3 vols. (Venice, 1563; new ed., Venice, 1835).

CABRERA, *ká-brá'rá*: small island in the Mediterranean, off the s. point of Majorca. It is about 3 m. in length and breadth, with an irregular coast, and is little else than a barren calcareous rock. The only interest attached to C. is that during the war in the Peninsula it formed a Spanish depot for French prisoners, who were crowded in thousands into the desolate spot, and treated with great barbarity; of which an account is given in a popular work, entitled the *Adventures of a French Sergeant*.

CABRE'RA, Don RAMON: 1810, Aug. 31—1877, May 24; b. Tortosa, in Catalonia: boldest leader of the Carlist party in Spain. The death of Ferdinand, 1833, gave the

CABRIOLET—CABUL.

signal for a civil war, and brought C. into notice. Placing himself at the head of some guerilla troops, he joined the Absolutists, or partisans of Don Carlos, and by his vigilance, energy, and daring soon rose to be second in command in the Maestrazgo district. Throughout Aragon and Valencia his name became a by-word for cruelty. After penetrating as far s. as Andalusia, his forces were completely routed by the royal troops, on the borders of Aragon, and he, severely wounded, escaped with difficulty into the woods. It was now rumored that C. was dead, when suddenly he reappeared at the head of 10,000 foot and 1,600 horse. Invading the province of Valencia, he overthrew the royal army at Buñol, 1837, Feb. 18, and again, Mar. 19, at Burjasot; but was vanquished at Torre-Blanca, and once more compelled to seek a hiding-place. Shortly afterward he reopened the war with fiery energy. Madrid itself was threatened by C., who, about this time, received the title of Count of Morella for his vigorous defense of the fortress of that name, and was also appointed gov.gen. of Aragon, Valencia, and Murcia. The Carlists now believed that the triumph of absolutism was approaching, when the treachery of the Carlist general, Marotto, changed the whole aspect of affairs, and Don Carlos fled from Spain. C. held out until Espartero forced him to quit the country in the summer of 1840. He then entered France, where he was taken prisoner, and confined for a short time in the fortress of Ham. In 1845, he strongly opposed Don Carlos's abdication of his rights. On the outbreak of the French revolution, 1848, he renewed the struggle on behalf of absolutism in Spain; but his adventure failed miserably, and he recrossed the Pyrenees, 1849, Jan. 17, to live in retirement. He afterward married a wealthy English lady, Marianne Catherine Richards. When Alphonso was proclaimed king of Spain, 1875, C. advised the Carlists to submit to him, chiefly because he was 'a good son of the church.'

CABRIOLET, n. *kăb'ri-ô-lă'* [F. *cabriolet*—from *cabriole*, a goat-leap, a caper]: a one horse coach with a hood and a cover for the legs; a cab.

CABUL, *kâ-bôl'*: that part of Afghanistan (q.v.) s. of the Hindu Kush; drained by the Cabul river. It extends from the s. of Ghiznee to the Hindu Kush, and from Bamian (q.v.) to the Khyber Pass. This region has long held the attention of the world. Through it, as the passage from Persia to India, Alexander the Great marched to complete his eastern conquests; from it issued Mahmoud of Ghiznee, the first Mohammedan invader of Hindustan.

CABUL (called in England *Cabool'*, but by Anglo-Indians *Cau'bul*): city, cap. of Afghanistan; lat. 34° 30' n., long. 69° 6' e.; near the point where the C. river, here crossed by three bridges, ceases to be fordable. Elevated about 6,400 ft., and overtopped, within a short distance to the n., by pinnacles of the Hindu Kush, about 14,000 ft. higher than itself, C. has a severe winter, and a temperate summer, ranging from 75° to 85° F. The city was formerly surrounded

CABUL—CACAINÉ.

with an earthen wall, which no longer stands. It is separated into different quarters, for defense, by stone walls—the Bala Hissar, or citadel proper, being on the e., and the Kuzzilbashes, or Persians, having a strongly fortified quarter on the s.w. In the days of Sultan Baber, C. was the capital of the Mogul empire. In more recent times, it has witnessed some of the most momentous events in Anglo-Indian history. In 1839, it was taken by the British; in 1841, it was lost through a treacherous outbreak, which led (1842, Jan. 6) to the massacre of about 4,000 soldiers and 12,000 followers; and, finally, after being recovered by General Pollock in the same year, it was abandoned, its bazaars and public buildings having previously been burned to the ground.

After the death of Dost Mohammed, Ameer of Afghanistan, 1863, Shere Ali, the son whom he had selected as his heir, had to fight for the possession of C. with Afzul Khan, his elder brother, and the son of the latter, Abdulrahman. In 1866, Afzul entered C. in triumph, and was proclaimed Ameer of Afghanistan. He applied to the Indian viceroy for recognition, but the request was declined. At the death of Afzul, his brother Azim took the title of Ameer, not of Afghanistan, but of C. and Candahar. In the end of 1868, Shere Ali, aided by his son Yakoob, obtained possession of C., which became again the cap. of Afghanistan. War was declared against Shere Ali by England, 1878. In the treaty concluded, 1879, by Yakoob, then the ameer by the death of his father, it was agreed that an English resident should be admitted to C.; and, 1879, July, Sir Louis Cavagnari was established in the capital. But, in September, he, his suite, and escort were assassinated; war recommenced; and a month later C. was occupied by English troops, who remained there till 1880, Aug. Meanwhile Yakoob, a fugitive under English protection, had abdicated his sovereignty; and Abdulrahman (or Abdurrahman), son of Afzul, was recognized as ameer.

Pop. of the city of C., 60,000.

CABUL': river in Afghanistan, rises lat. 34° 21' n., long. 68° 20' e., on the s. declivities of the Hindu Kush, or Indian Caucasus. Its source is 8,400 ft. above the sea; and an eastward run of 320 m., with a fall of about 7,500 ft., along n. Afghanistan, through the Khyber Mountains, and across Peshawur, carries it into the Indus, opposite to Attock, in the Punjab. The point of confluence marks the head of navigation on the main stream, while the tributary itself is navigable about 50 m. upward for craft of 40 or 50 tons. By means, therefore, of the two taken as one line, there is available communication of about 1,000 m. between the Khyber Mountains and the Indian Ocean. On the banks of the C. are the cities of Cabul, Jelalabad, and Dobundee.

CABURNS, n. *kā'bernz*: small lines made of spun yarn to bind cables.

CACAINÉ, n. *kă-kă'īn*; the essential principle of cacao

CACAO—CACHALONG.

CACAO, n. *kā-kā ō* [Mexican *cacauatl*]: the chocolate tree; the *Theobroma cacao*, ord. *Liliacæ*. **COCOA**, n. *kō kō*, a substance prepared from the *cacao nibs* or *nuts*: see **COCOA**.

CACAPON, *kā-kā-pou* or *kī-pou*: river in West Virginia, having its source in Hardy co., running n.e., and emptying into the Potomac river, about 3 m. from Berkeley Springs. It is 130 m. long, intersects Hampshire and Morgan counties, and is sometimes termed the 'Great Cacapon river.'

CACCAMO, *kā-kā-mo*: town in the province of Palermo, Sicily, about 6 m. s.w. of Termini: pop. 7,200.

CACCIA, *kāt-chā*, **GUGLIELMO**: 1568-1628; b. Piedmont. Italian fresco-painter, one of the most celebrated of his time. His oil paintings also were greatly admired, a 'Deposition from the Cross' being the most famous.

CACCIATORE, *kāt-chā-tō'rī*, **NICCOLA**: astronomer of Sicily, director of the Observatory of Palermo, and author of many works on astronomy.

CACERES, *kā-thā-rēs*: capital of the Spanish province of Caceres; 18 m. s. of the Tagus. It is noted for its bacon; has some manufactures of linen, woollens, leather, and a large trade in the produce of the district. It is the *Castra Cacilia* of the Romans. Pop. 14,000.

CACERES, *kā-thā-rēs*, **ALONSO DE**: 1499-1554; Spanish soldier who took part in several expeditions in Santo Domingo in 1519, conquering the province of Cartagena, and being chosen alcalde of its capital in 1534. After being present, in the following year, at the discovery of Cené, with Alonso de Heredia, whose distressed army he assisted, he undertook the conquest of Tolú, but was unsuccessful, and went to Peru, where he joined the royalists in opposition to Pizarro, but Pizarro victoriously entered Lima and imprisoned C. He later became a friend of Pizarro, but left his army and again joined the king's troops. He took part in several conquests in Bolivia, 1550.

CACERES, **NUEVA**, *nō-ā vā kā-sā-rēs*: town of the Philippines, in the s.e. of Luzon: pop. 12,000.

CACHALONG, or **CACHOLONG**, n. *kāsh' ŭ-lōng* [found on the banks of the river *Cach.* in Bucharra, whence the name]: beautiful mineral, regarded as a variety of Opal (q.v.); called sometimes Pearl Opal, or Mother-of-pearl Opal. It is generally of a milk-white color, rarely with a yellowish or reddish tinge, opaque and dull or pearly and shining, and has a flat conchoidal fracture. Among the localities in which C. is found are the Giants' Causeway and the Farøe Islands.

CACHALOT.

CACHALOT, or CACHOLOT, n. *kăsh' ŭ-lôt* [F. of Catalan origin: Dut. *kazilot*: Sw. *kaselot*]: the sperm or spermaceti whale (*Physeter macrocephalus* or *Catodon macrocephalus*); one of the largest of the *Cetacea* (q.v.), very peculiar in form and appearance, much sought after for the oil, but still more for the spermaceti (q.v.) which it yields. Ambergris (q.v.) also is obtained from it. The C. belongs to the family of *Cetacea* called *Physeteridae*, or *Catodontidae*, of which some naturalists still think that there is only one well-ascertained species. There appears, however, good reason for thinking that at least two species exist—the Common C., having no dorsal fin, and the High-finned C. (*Physeter Tursio*), having a very high dorsal fin. The Common C. has a very wide geographical range. It may be said to inhabit all seas, though most abundant in the southern hemisphere. It is not frequent on European shores, though it sometimes enters the Mediterranean, and is occasionally stranded on the coasts of Britain. The C.

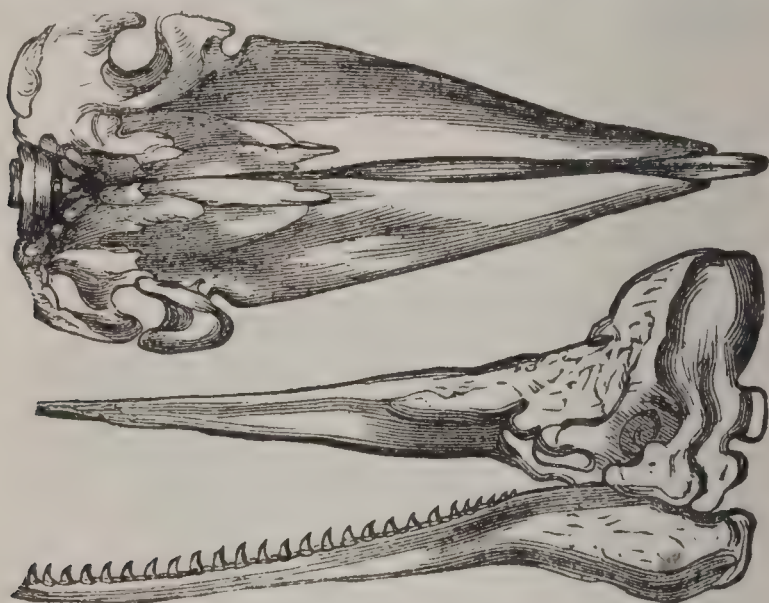


Cachalot, or Sperm Whale.

sometimes reaches the length of 80 ft. The head is enormously large, forming about one half the entire bulk of the animal, and occupying more than one-third of the entire length. From the head, the body tapers to the tail, and at last rather rapidly. The general color is very dark gray, nearly black on the upper parts, lighter beneath. Old males, or, in the language of the South Sea whalers, old bull-wales, usually have a large gray spot on the front of the head. The muzzle is very obtuse, almost as if suddenly cut off in front, the breadth of it almost equalling the thickness of the body. In a protuberance on the upper part of it is the blow-hole, which is single, a little on the left side, and in form not unlike the letter S elongated. The mouth is very large and wide; and the throat, unlike that of the Greenland whale, is very wide, sufficiently so to admit the body of a man. The upper jaw projects some feet beyond the lower, and is destitute both of teeth and whale-bone; the lower jaw has from 20 to 25 teeth on each side, according to the age of the animal. The teeth are conical and slightly recurved, projecting about two inches from the gum. The lower jaw is ex-

CACHALOT.

tremely narrow, the two branches being in contact throughout the greater part of its length: it fits into a groove in the upper, in which are cavities for the teeth. The eyes are small, and placed far back in the head, above the angles of the mouth; the left eye is said to be smaller than the right. Just above the eyes, the dorsal line rises considerably; the dorsal fin is also represented by a protuberance about half-way between the neck and the tail; and these parts are seen above water in the ordinary swimming of the animal, which is at the rate of from 3 to 7 m. an hour, and just under the surface of the water, although when alarmed it swims with greater velocity, striking the water upward and downward with its tail with great force. The pectoral fins are small, and seem scarcely, if at all, to aid in progression, which is accomplished by the large and powerful tail-fin. The tail-fin is



Skull and lower jaw of Cachalot.

very broad, and is divided into two lobes, called by whalers *the flukes*.

The enormous head of the C. is in great part occupied by a cavity in front of and above the skull, called by whalers *the case*, which is a receptacle for spermaceti (q.v.). This substance being light, it is not wonderful that the animal in swimming raises its head above the surface of the water, which it also often does even when at rest, 'like a black rock in the ocean.' The *case* frequently holds as much as ten large barrels of spermaceti. It is formed not of bone, but of a strong tendinous integument, and is divided into compartments communicating with each other. The substance which it contains is in a semi-fluid state, but hardens on cooling: it consists of spermaceti and oil; the oil is separated by draining and squeezing, and the spermaceti further purified, till, instead of being a yellow unctuous mass, in which state it is brought home by the whalers, it assumes a beautiful pearly white, flaky, almost crystalline appearance. When the spermaceti whale is killed, and towed alongside the whaling-ship, the *case* is emptied of its valuable contents through a hole

made in front of the muzzle, and by means of a bucket attached to a pole. The spermaceti was formerly imagined to be the brain of the whale; what purpose it serves in the animal economy is not well known, except that of giving buoyancy to the forepart of the huge body; and perhaps this is its chief use, respiration even more than progression depending on it; but it is distinct enough from the brain, which is comparatively very small, and is indeed, as well as the skull which contains it, small in proportion to the whole bulk of the creature. Cavities filled with spermaceti are distributed over the body, and even ramify through the external fat or blubber, although the principal mass is in the head. The blubber of the C. is not nearly equal in thickness to that of the Greenland whale, being only about 14 inches thick on the breast of a large whale, and 8-11 inches on other parts of the body. It is called by whalers the *blanket*, is removed from the body of the captured whale in great strips, and is heated in large pots, the skin of the whale serving for fuel, when the oil known as SPERM OIL (q.v.) flows from it. The *junk*, a thick elastic mass, which occupies the forepart of the head, immediately under the *case*, also yields considerable sperm oil.

The C. feeds upon fishes and cephalopodous mollusks. Squids and cuttle-fishes appear to be its chief food. It is gregarious, and the herds are called *schools* by whalers. Five hundred or more have been seen in a single herd. Large herds generally consist of females, with only a few males; herds of young males also occur; when solitary individuals are met with, they are almost always old males. Terrible conflicts often take place among the males, and it is not unusual to find the lower jaw deformed in consequence of having been dislocated or broken in them. See WHALE-FISHERY.

CACHAÛ, *kâch-â'o*, or KESHO (also HANOI): ancient capital of Tonquin (see COCHIN-CHINA), on the Song-Ka or Red river, chief river of Tonquin, which rises in Yunnan. C. is on a plateau above the top of the Song-Ka delta, abt. 100 m. from the sea, and is accessible to vessels drawing from 4 to 6 ft. of water. Hanoi, the present capital of the province, is close to C., and may be considered practically one city with it. C. is a town of some 100,000 inhabitants, much the largest in this state, and has a citadel.

There is considerable trade. Exports are bullion, silks, and lacquered ware; imports are pepper, arms, chintzes, and manufactured goods generally.

Other towns are, Namdinh, an agricultural centre with 40,000 inhabitants; Haiphong, important treaty port at the mouth of the Song-Ka; Sontay and Bacninh, on the edge of the delta and the plateau, which are of strategical value.

CACHAR, *kâ-châr'*, or HAIRUM'BO: district of British India, since 1874 included in the chief-commissionership of Assam. It comprises 3,570 sq. m. It is mostly mountainous and uncultivated. Its principal river is the Barak,

CACHE—CACHEXIA.

which, after a singularly tortuous course of 350 m., enters the Brahmaputra, about 40 m. above Dacca. The territory produces rice, cotton, tea, sugar, timber, bamboo, iron-ore, wax, and ivory; and imports salt, cloths, tobacco, and ghee or half-liquid butter. Pop. (1891) 386,483.

CACHE, n. *kăsh* [F. *cache*, a lurking-hole—from *cachier*, to press under foot, to conceal—from mid. L. *coactūre*, to press together]: a secret store or deposit of supplies, as of food: name first applied by parties of travellers in the unsettled portions of the United States and Canada to places for concealing provisions and other articles. Designing to return on their tracks after crossing the Rocky Mountains, or after other journeyings, they disburden themselves of what articles can be spared, and to conceal them from the Indians, or from wild animals, construct places of deposit in the wilderness. The making of a C. is a matter of much labor and ingenuity. A hole is dug to a depth of 6 or 8 ft. and several feet broad, and then the articles being interred, the surface is replaced with the utmost possible care. The excavated earth is also carefully removed, so as to leave no trace of the excavation. The situation of the C., however, is known to the party by some landmark, and returning months afterward, they find its contents undisturbed. Similar deposits have been a frequent expedient with Arctic explorers, for preserving food for themselves, or for other parties.

CACHECTIC, a. *kă-kěk'tik*, or **CACHECTICAL**, a. *-tī-kăl* [Gr. *kakos*, bad; (*h*)*exis*, habit]: pertaining to a vitiated or deranged state of the body called **CACHEX'IA** (q.v.), n. *ka-kěk'sī-a*, or **CACHEX'Y**, n. *-sī*.

CACHEO, *kă-shā'o*, or **CACHAO**, *ka-shā'o*, or **CACHEU**, *kă-shā'ô*: town of Senegambia, in the land of the Papels, a few miles inland from the mouth of the river Cacheo or St. Domingo, between the Gambia and Rio Grande; lat. 12° 6' n., long. 14° 55' w. It is a fortified post of the Portuguese, with a trade in gold-dust and ivory, as formerly in slaves. Pop. 15,000.

CACHET, n. *kăsh'ă* [F. *cachet*, a seal—from *cachier*, to conceal]: a seal, as of a letter; a mark or character. **LETTRE-DE-CACHET**, n. *lêt'r-dě-kăsh'ă* [F. letter-of-seal, or sealed-letter]: in *French history*, an arbitrary warrant of banishment or imprisonment, formerly issued in the form of a letter, by the kings of France: see **LETTRES-DE-CACHET**.

CACHEXIA, *ka-kěk'sī-a*: a name applied sometimes to a group of diseases, sometimes to the constitutional state accompanying a particular disease—e.g., Cancerous C., Gouty C., Mercurial C. From Cullen's having in modern times given extensive circulation to the word, as indicating a large group of chronic diseases, in most of which there are complicated changes in the blood and in the solid textures, C. has come to be applied chiefly to diseases in which the general nutrition of the body is at fault, and in which the local disorders are supposed to be the result of a constitutional cause. Thus, Cancerous C. indicates the peculiar impoverished state of the blood and general de-

CACHICAMA—CACODYLE.

bility associated with the deposits of cancer in various parts of the body; Gouty C., the state of the general system in gout, as opposed to the mere local attack in the foot, etc. The cachexiæ differ from the fevers in being much slower in development, and, for the most part, in having no natural termination at a fixed period: see CRISIS.

CACHICAMA, or TATOU-PERA (*Dasypus novem-cinctus*): species of Armadillo (q.v.), abt. 15 inches long; harmless. It feeds on insects. It is a S. American animal.

CACHINNATION, n. *kăk'in-nâ'shûn* [L. *cachinnārē*, to laugh aloud]: loud or immoderate laughter. CACHINNATORY, a. *kă-kîn'nâ-tēr-î*, laughing immoderately.

CACHOEIRA, or CAXOEIRA, *kâ-sho-ă'er-â*: town in Brazil, province of Bahia. Its trade is in coffee, sugar, and tobacco. Pop. abt. 15,000.

CACHOU, *kăsh-ô'*, CACHOUS, n. plu. *kăsh-ôz'* [F. *cachou*, a kind of rosin]: a pharmaceutical term for an extract prepared from the *Mimōsā catēchu*, ord. *Leguminōsæ*; an extract used to sweeten the breath.

CACHUCA, n. *ka-chû'ka* [Sp.]: an Andalusian dance, closely resembling the Bolero; the music for the same, in $\frac{3}{4}$ time.

CACHUNDE, n. *ka-chôn'dă* [Sp.]: a pastile or troche, composed of various aromatic and other ingredients, highly celebrated in India or China as an antidote, and as stomachic and anti-spasmodic.

CACIQUE, n. *kă-sêk'*, or CAZIQUE-*zîk'* [Sp., from the language of the former inhabitants of San Domingo]: a petty king, particularly of ancient Mexico.

CAK, *kăk* [Dan. *kakke*; Dut. *kakken*; Ger. *kacken*, to cack—from L. *cacārē*, to go to stool]: to go to stool; to ease the body by stool. CACK'ING, imp. CACKED, pp. *kăkt*.

CACKEREL, n. *kăk'er-êl* [Eng. *cack*; -*er*; dim. suffix -*el*]: a fish which, when eaten, produces laxity of the bowels.

CAKLE, v. *kăk'kl* [an imitative word: Sw. *kakla*; F. *caqueter*, to chatter: Dut. *kaeckelen*; Turk. *kakulla*, to cackle]: to make a noise like a hen; to make a silly noise; to giggle: N. the noise of a hen; idle talk. CAC'KLING, imp.: N. the noise of a hen. CACKLED, pp. *kăk'kld*. CAC'KLER, n. -*klër*, one who.

CACOCHYMIA, n. *kăk'ô-kîm'î-ă* [Gr. *kakos*, bad; *chumos*, juice]: a diseased condition of the humors resulting from any cause. CACOCHYMICAL, a. *kăk'ô-kîm'î-kûl*, and CAC'OCHYM'IC, a. -*îk*, having the humors in a depraved state.

CACODEMON, or CACODÆMON, n. *kăk'ô-dê'môn* [Gr. *kakos*, bad; *daimon*, a spirit or demon]: a bad or evil spirit; a devil: see DEMON.

CACODYLE, or KAKODYLE, n. *kăk'ô-dîl* [Gr. *kakos*, bad; *ozô*, I smell; *ûlê*, matter]: terribly poisonous compound, containing carbon, hydrogen, and arsenic (C₄H₆As). It has been proposed to employ the oxide of C. (C₄H₆AsO) as a deadly agent in war. This compound, otherwise known

CACOETHES—CACTEÆ.

as *Cadet's fuming liquor*, or *alkarsine*, called also *arsendim'ethyl*, has the remarkable property of taking fire spontaneously when exposed to the air, and evolving abundant fumes of arsenic. Thus a shell filled with it would, on bursting, saturate a space of ground, or the rigging or deck of a man-of-war, with a liquid which would quickly take fire of its own accord, and besides causing destruction by burning would likewise spread death by its fumes. Cacodylic acid, a compound of C., is not poisonous.

CACOETHES, n. *kāk'ō-ē'thēz* [Gr. *kakos*, bad; *ēthos*, custom, habit] bad custom or habit, generally applied to inveterate scribblers.

CACOGRAPHY, n. *kǎ-kǒg'rǎ-fī* [Gr. *kakos*, bad; *grapho*, I write]: bad spelling.

CACOLOGY, n. *kǎ-kǒl'ō-jī* [Gr. *kakos*, bad; *logos*, a word]: bad grammar or speaking.

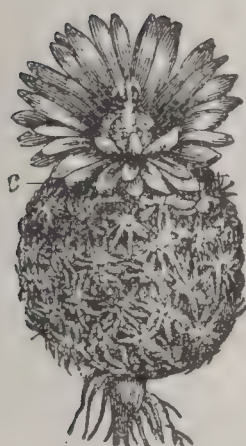
CACONGO, *kā-kong'go*, or MALLEM'BA: independent state of S. Guinea, Africa, extending along the s. Atlantic Ocean; lat. 5' s., and stretchings e. as far as the river Bell. Its limits interiorly are not well defined. The country is generally flat, and the soil fertile. The principal towns are Kinguele, and Cacongo and Mallemba on the coast, the last formerly a great mart for slaves.

CACOPHONY, n. *kǎ-kǒf'ō-nī* [Gr. *kakos*, bad; *phōnē*, a voice]: disagreeable or harsh sound of words; discord. CACOPH'ONOUS, a. *-ō-nūs*, and CAC'OPHON'IC, a. *-ō-fōn'īk*, harsh-sounding.

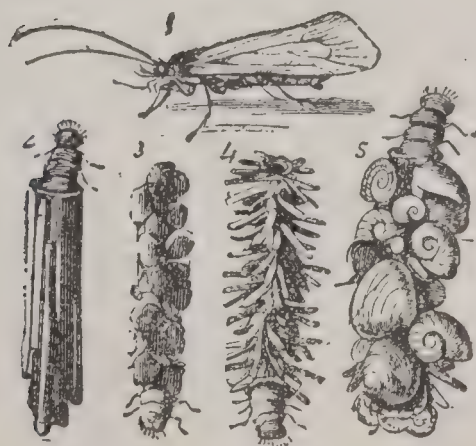
CACOTECHNY, n. *kāk'ō-tēk-nī* [Gr. *kakos*, bad; *technia*, art]: a bad or depraved or state style of art.

CACOTROPHY, n. *kāk-ōt'rǎ-fī* [Gr. *trophia*, nourishment]: bad or defective nourishment.

CACTEÆ, *kāk'tē-ē*, or CACTACEÆ, *kāk-tā'sē-ē*: nat. ord. of exogenous plants, consisting of succulent shrubs of very singular appearance. Linnæus included all the C. in the single genus *Cactus*, which is now divided into a number of genera; the name *Cactus*, however, still continuing in popular use, common to the whole order. Nearly 500 species are known; the real number is probably much greater. The C. are, without exception, natives of America, and their extraordinary forms constitute a remarkable feature in the vegetation of its warmer regions. All of them have fleshy stems, either simple or branched, often very soft and juicy; but in many, at least when old, having an easily distinguished woody axis, composed of annual rings, and covered with a layer of inner bark, so that the thick fleshy part may be regarded only as a layer of bark. Most of them are leafless; the *Pereskia* alone have true leaves, which are fleshy; and the *Opuntia* have rudimentary leaves, which soon fall off; but, instead of leaves, most of the order have clusters of hairs or prickles, where buds are formed in their stems, and these are very numerous, even in the species which in ordinary circumstances most rarely develop branches. The multiplicity of curious forms exceeds imagination; in many species (*Melocactidæ*, or Melon Thistles) the stem swells out into a globe; in others (*Torch Thistles*)



Cactæ.—a, *Cereus giganteus*; b, *Opuntia coccinellifera*; c, *Mammillaria pectinata*; d, *Phyllocactus anguliger*.



Caddice-fly and Worms: 1, Caddice-fly; 2, Larva in case formed of straw or dry grass stalks; 3, In case formed of small stones; 4, In case formed of grass roots; 5, In case formed of small shells,

CACTEÆ.

it rises up as a column with many angles; in others (*Opuntia*, Indian Figs, or Prickly Pears) it divides in leaf-like articulations; in some (*Pereskia*) it assumes a tree-like form, in which the thick stem bears a head of branches, and reaches a considerable height, sometimes even 30 or 40 ft. Those which have angular, ribbed and channelled, or flat and two-edged stems show a tendency to the cylindrical form as the stem advances in age. Some species have long creeping or trailing stems. The whole organization of the C. adapts them for the endurance of long droughts; they



Melon Cactus or Thistle
(*Melocactus*).

vegetate vigorously during a part of the year, and then rest; the very absence of leaves concurring with the absence of pores or *stomata* in their tough skin to enable them to resist the action of a dry atmosphere and powerful sunshine, and to occupy arid soils and bare rocks, on which they are often found covering large tracts. Some of them grow rapidly on old lavas, and disintegrate them by their penetrating roots, thus preparing a soil for other plants; and the Prickly Pear is often planted in Sicily by the mere insertion of a branch or joint of it in a fissure of lava. Many species

occur as *epiphytes* (q.v.) on the trees of American forests.



Cochineal or Nopal Cactus (*Opuntia Cochinellifera*),
with Cochineal Insects.

Some also grow on high mountains, a few even reaching

CACTUS—CADAMBA.

almost to the border of the snow. The plants of this order are a great boon to the regions in which they chiefly abound, which are during great parts of the year liable to be destitute of water—their stems containing a store of insipid and wholesome juice, of which both men and cattle avail themselves.—Some species, as the Prickly Pear (q. v.), produce a pleasant fruit.—The fruit of *Opuntia Tuna* affords a valuable pigment of the richest carmine color.

The flowers of the C. are in general very short-lived; those of some night-flowering species, as of *Cereus grandiflorus*, well known in hothouses, endure only for part of a single night. In the greater number they are large and splendidly colored, in some they are very fragrant. The order is regarded as botanically allied to *Mesembryaceæ* (q. v.) and to *Grossulariaceæ* (q. v., Gooseberry, Currant, etc.).

The cultivation of the C. in green-houses and hothouses has been much in fashion for more than 30 years. The gardener must imitate the natural conditions of their growth, by giving water freely during a few months, and withholding it almost entirely during the rest of the year. Most of them are easily propagated by branches, taken off, and allowed to dry a little before being planted. The *Melocactidæ*, which do not readily produce branches, are made to do so by cutting off or burning out the central bud, that the means of propagating them may be obtained.

CACTUS, n. *kăk'tis*, **CACTI**, plu. *kăk'tî* [L. *cactus*, a prickly plant]: a genus of tropical plants with fleshy prickly stems and leaves—a name loosely applied; a genus of flowering plants; the Indian fig tribe; the melon-thistle: see **CACTEÆ**. **CACTACEOUS**, a. *kăk-tă'shûs*, pertaining to the *Cacteæ* or *Cactaceæ*.

CACUMINATE, v. *ka-kû'mîn-ăt* [L. *cacumino*—from *cacumen*, an apex]: to reduce to a point or an apex.

CACUS, *kă'kûs*: a man eating giant of mythology, son of Vulcan and Medusa, who lived in a cave on Mt. Aventine, in Italy, robbed the adjacent country, and vomited fire and smoke. He stole some of Geryon's cows from Hercules, and dragged them into his cave by the tails, that they might not be tracked by their foot-prints. Hercules, discovering the theft, strangled him, and erected an altar to Jupiter Servator. An annual festival was kept by the people of those parts to commemorate their deliverance.

CAD, n. *kăd* [Scot. *cad* or *caddie*, one who gains a livelihood by running errands: Gael. *cad*, a friend; may also be a familiar corruption of Eng. *cadet* (see **CADET** and **CADGE**): an omnibus conductor; a hanger-on about railways or stage-coaches; an errand-boy; a person employed under another in job-work; one who would do a mean or base action; a snob or vulgar person. **CADDISH**, a. *kăd'ish*, vulgar; mean. **CAD'DISHNESS**, n. snobbishness; mean vulgarity.

CADAMBA, *ka-dăm'ba*, or **KUDUMBA**: wood of several species of *Nauclea*, a genus of trees of the nat. ord. *Cin-*

CADASTRE—CADDICE.

chonacex, natives of the East Indies, having flowers with a funnel-shaped corolla. *N. cadamba* is a noble tree, with orange-colored fragrant flowers, collected in heads about the size of a small apple. The leaves are 6–10 inches long. The wood is yellow, soft, and fine-grained. The tree is highly prized for shade; the wood is used for various purposes. *N. cordifolia* is a large tree, plentiful in mountainous districts of Hindustan; the wood yellow, close-grained, used for flooring-planks, packing-boxes, and many other purposes, as is also that of *N. parviflora*. All kinds of *C.* wood are liable to be injured by moisture, and can be used only where they are to be kept dry.

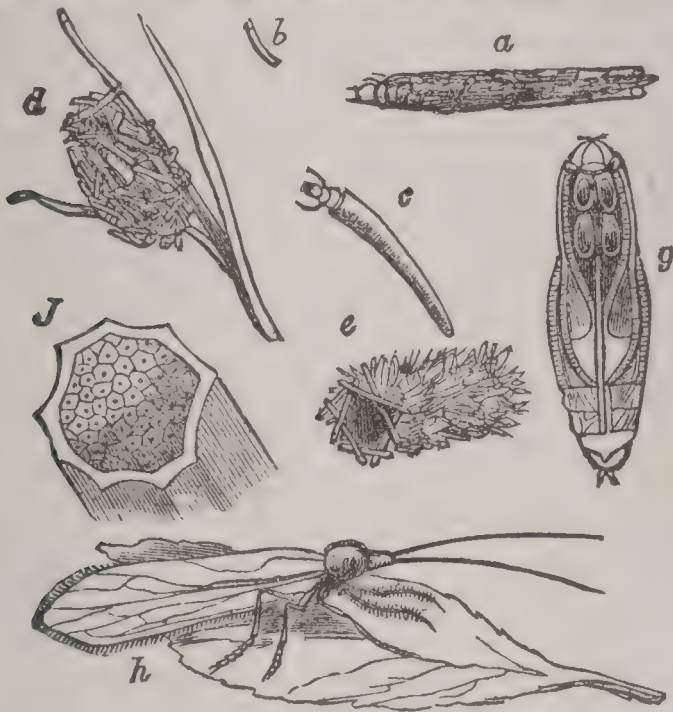
CADASTRE, n. *kă-dăs'tër* [F. *cadastre*; OF. *capdastre*, an official report on real property—from mid. L. *capitas'trum*, a register for taxation—from *caput*, the head, the capital sum of a contribution]: a statistical account; an outline descriptive map, showing the different properties of a district, such as may be taken in the government survey. **CADASTRAL**, a. *kă-dăs'trăl*, descriptive; showing the different properties of a district and giving other statistical information; showing the true relative position and size of objects on the surface of the country: a usual scale for a cadastral map is 2 ft. to a mile.

CADAVER, n. *ka-dă'vër* [L. *cadaver*—from *cado*, I fall]: a corpse; a carcass. **CADAV'EROUS**, a. *-üs*, or **CADAV'ERIC**, a. *-ïk*, resembling or pertaining to a corpse; pale; wan; ghastly. **CADAV'EROUSLY**, ad. *-lï*. **CADAV'EROUSNESS**, n.

CADDICE, or **CADDIS**, n. *kăd'dïs*, or **CADDICE-FLY** [corruption of *cod-bait*; Ger. *köder*, bait], (*Phryganea*): Linnean genus of insects of the ord. *Neuroptera*, a family in subsequent entomological systems, and constituted by Kirby into a distinct order, *Trichoptera* [Gr. hairy-winged]. The caddis-flies certainly differ in important particulars from the other neuropterous insects, and have points of resemblance to the *Lepidoptera*. They have no mandibles, and the maxillæ and lower lip are membranous and united; the head is small, with prominent eyes, and two additional small simple eyes situated on the forehead; the antennæ are long and bristle-like, composed of very numerous indistinct joints. Both wings and body are generally very hairy, and the wings, when at rest, are raised, and meet above the back like those of butterflies, from which, however, they differ very much in form, being much more elongate: the legs are long. *C.*-flies are extremely active, particularly in the evening and at night, when the smaller species often fly in great numbers above streams and ponds. These insects are most interesting, however, on account of their larvæ, of which the larger kinds are the well-known *Caddis-worms*, or *Cad-bait* of anglers. They are of a long, almost cylindrical form, the head and first three segments hard, the remainder—the abdominal segments—soft. To the thoracic segments are attached the feet, six in number, as in the perfect insect. The larva lives always in water, feeding on aquatic vegetables. It spins by its mouth silken threads, by means of which

CADDIS

together with a viscid substance, it attaches together—and often in a very symmetrical manner, and with interesting peculiarities which differ in the different species—small hard substances, such as small stones, bits of stick, or small shells, even though they happen to contain living inmates, and thus constructs a case for itself, in which its soft body is protected, and from which only the head and hard thoracic segments are voluntarily protruded. When it changes into the pupa state, in which it differs little from the perfect insect, except in the imperfectly developed wings, it fixes its case to some solid substance beneath the water, and closes the two extremities with a kind of grating, which admits the free passage of water, necessary for respiration. Before assuming the perfect form, the pupa of the larger species breaks out of its case



Various shapes of Caddice Cases, and perfect Insect:

a, case of bark; *b*, case of sand; *c*, case of sand, magnified; *d*, case of grass stems; *e*, case of grass; *f*, orifice of case, showing the silk grating, magnified; *g*, pupa; *h*, stone, or caddis-fly.

by means of a pair of hooks on the forepart of the head, and swims actively by means of the hind legs, or crawls by the other two pair. Many of the smaller species bring their pupa case to the surface of the water, and there take wing from it as from a boat. The species of C.-fly are very numerous, and they are said to be more so in the n. than in the s. of Europe. About 200 British species have been described.—The angler looks for cad-bait about the edges of streams and under stones, or on the stalks of water-cresses and other aquatic plants. As a bait for angling, the C. is almost as deadly as the May-fly, and more so, in clear running streams, than the ordinary worm; the usual-sized bait-hook is used, upon which two of the baits are fixed, the angler proceeding exactly as in ordinary worm-fishing.

CADDIS. n. *kā'd'ā's* [Scot. *caddis*, lint for dressing a

CADDY—CADE.

wound. Gael. *cadas*, cotton. F. *cadis*, a sort of serge]: lint for dressing wounds; a kind of worsted lace or ribbon.

CADDY, n. *kăd'dî*, CADDIES, plu. *kăd'dîz* [Chin. *catty* the weight of the small packets in which tea is made up. Malay, *katî*, a weight of $1\frac{1}{3}$ lb.]: a small box for tea.

CADE, n. *kăd* [Icel. *katr*, joyous: Dan. *kaad*, frolicsome: Gael. *ceadach*, forward]: a forward and troublesome creature; a pet lamb; a lamb brought up by the hand; an unduly indulged or petted child.

CADE, n. *kăd* [L. *cadus*, a bottle: Russ. *kade*, a cask]. a barrel; a cask.

CADE, *kăd*, JACK: d. 1450, July 11: leader of an insurrection which broke out in Kent, England, in the month preceding his death. Little is known of his personal history, further than that he was an Irishman, and an illegitimate relation of the Duke of York, and hence called himself Mortimer. With 15,000 or 20,000 armed men of Kent, C. marched on London, and encamped at Blackheath, whence he kept up a correspondence with the citizens, many of whom were favorable to his enterprise. The court sent to inquire why the good men of Kent had left their homes; C., in a paper entitled 'The Complaint of the Commons of Kent,' replied that the people were robbed of their goods for the king's use; that mean and corrupt persons, who plundered and oppressed the commons, filled the high offices at court; that it was 'noised that the king's lands in France had been aliened;' that misgovernment had banished justice and prosperity from the land, and that the men of Kent were especially ill-treated and overtaxed, and that the free election of knights of their shire had been hindered. In another paper, called 'The Requests by the Captain of the Great Assembly in Kent,' C. demanded that the king should resume the grants of the crown, which he complained the creatures about the royal person fattened on, the king thus being compelled to live on taxation; that the false progeny of the Duke of Suffolk should be dismissed; and that the Duke of York and others should be restored to favor, and a number of persons punished. The court sent its answer in the form of an army, before which C. retreated to Sevenoaks, where he awaited the attack of a detachment, which he defeated. The royal army now objected to fight against their countrymen; the court made some concessions, and C. entered London, July 3. For two days he maintained the strictest order; but he forced the mayor and judges to pass judgment upon Lord Say, one of the king's hated favorites, whose head C.'s men immediately cut off in Cheapside. On the third day some houses were plundered, the leader himself, it is said, setting the example. C., who at night lodged his army in the borough, got news that the citizens intended to prevent his entrance into the city on the morrow, and in the night he made an attack on the bridge, but was defeated. A promise of pardon now sowed dissension among his followers, who dispersed, and a price was set upon C.'s head. He at

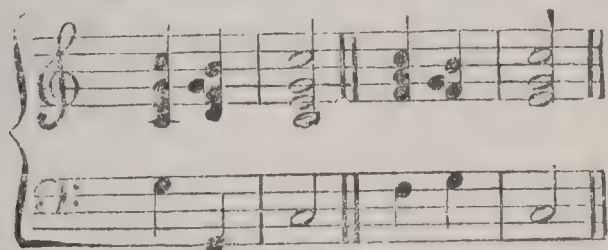
CADELLE—CADENCE.

tempted to reach the Sussex coast, but was followed by an esquire, named Alexander Iden, who fought and killed him. His head was stuck upon London Bridge as a terror to traitors.

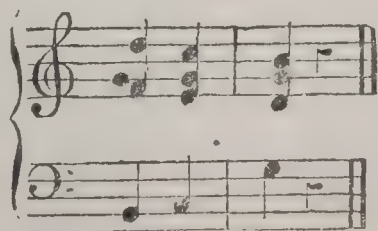
CADELLE, *kā-dēl* [F.], (*Trogosita Mauritanica* or *caraboides*): insects sometimes found in granaries in Britain, but seemingly imported from more southerly countries, where, as in France, its larvæ often commit great ravages among stored corn. They feed also on bread, almonds, and even rotten wood. When full grown, they are about three-quarters of an inch long, flattened, fleshy, rough with scattered hairs, whitish, tapering toward the head; which is black, horny, and furnished with two curved jaws. The perfect insect is a glossy beetle of a deep chestnut color, marked with dotted lines. It belongs to the family of *Xylophagi*, of the order *Coleoptera* (q.v.), section *Tetramera*.

CADENCE, n. *kā-dēns* [F. *cadence*—from It. *cadēnza*, cadence, measure—from L. *cadens*, a falling]: a fall; a decline; the modulation of the tones of the voice in reading; tone; sound; the manner of ending a piece of music: V. to regulate by musical measure. **CADENCED**, pp. *-dēnst*: ADJ. regulated by modulation of the voice, or by musical measure. **CADENZA**, n. *kā-dēn'zā* [It.]: modulation of the voice in singing; ornamental succession of notes introduced at the pleasure of the performer in finishing a phrase.

CADENCE in Music: the finish of a phrase (in German, *Schlussfall*), of which there are three principal species—viz., the whole, the half, and the interrupted cadence. The whole C., which finishes on the harmony of the tonic, is also called the perfect C., and is always used at the end of a composition, and frequently called the final cadence. In its most perfect use it consists of three chords—the one before the final being always the dominant, as for example:



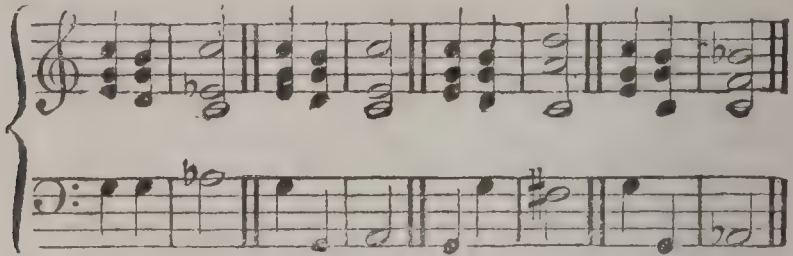
The half C., also called the imperfect C., is used to mark the termination of an idea or phrase, like the colon and semicolon; showing a considerable division, but at the same time that a continuation is necessary. The harmony of the half C. is the reverse of the whole C., as it falls from the tonic to the dominant, and sometimes to the subdominant, as follows:



In the interrupted C. (Ger. *Trugschluss*; Ital. *Cadēnza*

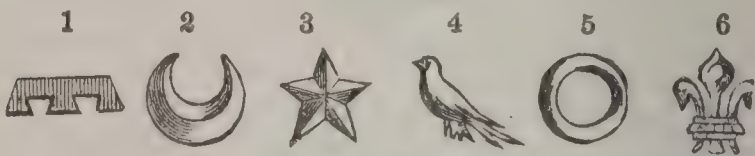
CADENCY,

d'inganno), the preparation for the ordinary perfect C. is made; but instead of the harmony of the tonic following the dominant, another harmony quite strange is introduced, so that the ear is deceived. The more particular the preparation for the usual C. is made, the more strange and unexpected is the interruption, which can be made in so many ways that Reicha, in his *Traité de Haute Composition Musicale*, gives 129 interrupted cadences. The following are those generally in use:

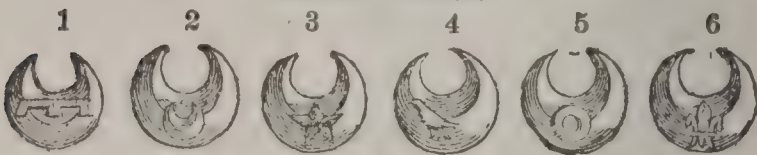


CADENCY, n. *kā'děn sĭ* [L. *cadens*, falling]: in *her.*, the system of distinguishing the several sons in a family by special bearings, as they fall or branch off from the stock. No distinction is usually made by writers on heraldry, and probably the practice of heralds in general scarcely admits of any being made, between *marks of C.*, *differences*, *distinctions*, or even *brisures*, though the last term is frequently, and quite appropriately, used to include not only differences

First House.



Second House.



Distinction of Houses:

In the First House, the first, second, etc., sons are denoted by 1, the label; 2, the crescent; 3, the mullet; 4, the martlet; 5, the annulet; 6, the fleur-de-lis; 7, the rose (not figured in the cut); 8, the cross moline; 9, the double quatrefoil. In the Second House, or family of the second son, the first son is denoted by (1) the crescent, with the label upon it; the second, by (2) the crescent, with the crescent upon it; and so on. In the Third House, or family of the third son, the first son is denoted by the mullet, with the label upon it; the second, by the mullet, with the crescent upon it; and so on.

in general, but also abatements (q. v.) or bearings by which the arms of the family are broken or diminished: see BASTARD BAR. But there is a manifest convenience in the practice which is usually followed in Scotland of appropriating the label, the crescent, the mullet, and the rest of the series of marks, commonly known as marks of C., to the purpose of distinguishing the sons from the father, and from each other, during the father's lifetime; and of adopting other distinctions—such as the *bordure* of

CADER IDRIS—CADET.

various kinds, the chief engrailed, embattled, and the like, as differences between the coats of brothers, after the death of their father, and of the houses descended from them. Another very common mode of differencing the shields of brothers in early times was by changing the tinctures; but this is now regarded as too extensive a change for such a purpose. The method of differencing by means of the ordinary marks of C. is shown in the accompanying illustration. Fanciful reasons have been imagined by heralds for assigning these different marks to the different sons.

The differences at present used by the royal family will be found in most of the peerages. The rule with regard to them seems to be that, unlike subjects, they all bear the label of three points argent; but the label of the Prince of Wales is plain, while those of the other princes and princesses are charged with crosses, fleurs-de-lis, hearts, or other figures, for the sake of distinction. One of the most frequent reasons for matriculating the arms of the younger branches of families of distinction in the Lord Lyon's Register is that they may be properly distinguished from those borne by the head of the house.

CA'DER IDRIS (Chair of Idris, a reputed giant): picturesque mountain in Merionethshire, Wales, 5 m. s.s.w. of Dolgelly. It consists of an immense ridge of broken precipices, 10 m. long, and 1 to 3 m. broad; the highest peak reaching 2,914 ft. It is composed of basalt, porphyry, and other trap rocks, with beds of slag and pumice. The view from the summit, which is very extensive, includes the Wrekin in Shropshire, and St. George's Channel almost to the Irish coast.

CADET, n. *kǎ-děť* [F. *cadet*, the younger son of a family—from Prov. *capdet*—from mid. L. *capitet'us*, a little head—from L. *caput*, the head: Sp. *cabdillo*, lord, master: Icel. *cad*, a new-born offspring]: term allied in meaning to *cadency* (q.v.) in heraldry—second son or little head of the family; a younger son; a young man in a military school; a youth appointed to the army, but not yet holding a commission. CADET'SHIP, n.

MILITARY CADET: in France, any officer junior to another is a C. in respect to him. In a strict military sense, however, a C. is a youth studying for the public service. This is the use of the term in the United States: it is applied to all students in the West Point Military Acad., and in the Annapolis Naval Academy.

In England, military cadetship has presented two aspects, according as it related to the East India Company's or to the royal service. When the company possessed political and military authority in India, there were about 5,000 English officers in their pay. Those who commanded the company's own regiments had been professionally educated by the company. A youth, nominated by the directors, was examined as to his proficiency in an ordinary English education, and admitted between the ages of 14 and 18 to Addiscombe school or college, near Croy-

CADET'S FUMING LIQUOR—CADILLAC.

don. If a probation of six months resulted satisfactorily, he entered upon a two years' course of study. If he passed through this ordeal well, he became a C. in the company's service, receiving pay or salary, and being available for service in India, as opportunity might offer. The system of Indian cadetship underwent various modifications by the introduction of competition in the appointments, and by the transference of the company's powers to the crown; and ceased in 1861, when the accession of fresh officers to the local Indian armies was stopped.

The second aspect of military cadetship in England, adverted to above, is that of the Royal or Queen's cadets: see SANDHURST COLLEGE: STAFF COLLEGE: MILITARY ACADEMY, ROYAL.

A college, designated the Cadet's College, established, 1858, by a remodelling of the junior dept. of the Royal Military College at Sandhurst, had for its object the preparation of youths for the army. The system of which this college was a part was abolished 1870. Sub-lieutenants of cavalry and infantry, styled 'student officers,' who have done duty with a regiment for about 12 months, are now required to attend the college at Sandhurst, and go through a course of study for a year. At the end of it, on passing a satisfactory examination, they are promoted to the rank of lieut., and rejoin their regiments.

NAVAL CADET: lowest grade of officer in the British navy. The cadets enter the royal service at 12 to 13½ years of age. The candidates are examined at the Royal Naval College at Greenwich; if they pass, they are sent for two years to the *Britannia* training-ship at Dartmouth, which is virtually a public school, for tuition in which the C.'s parent or guardian pays £70 a year. If they do not make satisfactory progress in the training-ship, they are rejected; but if the report is favorable, they are put into sea-going ships. Passing from the training-ship, with a first-class certificate, a cadet becomes a midshipman at once; otherwise, according to the progress he makes. Cadets mess with the midshipmen on ship-board.

CADET'S FUMING LIQUOR: see CACODYLE.

CADGE, v. *kāj* [*cadge*, the round frame of wood on which the hawks were carried: W. *côd*, a bag or pouch]: in *Scot.*, to hawk or carry about for sale, as fish, and the like. CADG'ING, imp. CADGED, pp. *kājd*. CADGER, n. *kāj'ér*, one who brings butter, eggs, and poultry to the market; a huckster.

CADI, n. *kā'dī* [Arabic]: a judge or person learned in the law; an inferior judge among the Mohammedan nations, who, like the Mollah (q.v.), or superior judge, must be chosen from the higher ranks of the priesthood, as all law is founded upon the Koran.

CADILLAC, n. *ka-dīl'läk* [from *Cadillac*, town in the dept. of the Gironde, France]: a kind of pear.

CADILLAC, *kā-dēl-yāk'*, ANTOINEDE LA MOTHE: a Gas-

CADIZ.

con explorer, who came to Acadia, and obtained a grant of Mt. Desert Island, off the coast of Maine, in 1691. He held command at Michilimackinac 1691-97, and later at Detroit, which he founded 1701; was gov. of Louisiana 1712-17, tried unsuccessfully to work silver-mines and open trade with Mexico, built several forts, and had trouble with the Natchez Indians. He died about 1720: in 1787 his descendants recovered possession of some of his lands in Maine.

CADIZ, *kā'dīz* (ancient *Gades*): important commercial city of Spain, cap. of the modern province of C., part of the great division of Andalusia; at the extremity of the long narrow isthmus of the Isle of Leon; lat. $36^{\circ} 32'$ n., long. $6^{\circ} 17'$ w. The Atlantic washes its w. and part of its s. side, and on the n. and n.e. it is inclosed by the Bay of Cadiz, a deep inlet of the ocean, forming an outer and an inner bay. Connected by only a narrow strip of ground (in some places not above 200 yards across) with the mainland, C. is admirably situated for defense; but though it has several sea and land fortifications, the place is not considered impregnable. The town, which is surrounded by walls, forms nearly a square, each side about a mile and a half in length. The houses being built of white stone, the city presents a remarkably bright and clean appearance from the sea. The streets are well-paved and lighted, regular, but narrow, and there are some pleasant public walks, the most frequented of which is the Alameda. It has few public buildings of note; its two cathedrals are, on the whole, poor specimens of ecclesiastical architecture, and its pictures, with the exception of one or two excellent pieces by Murillo, are of little value. C. declined greatly as a commercial city after the emancipation of the Spanish colonies in S. America; but owing partly to the recent extension of the railway system in Spain, and partly to the establishment of new lines of steamers, the trade has, within 30 years, revived considerably. Quite lately there has again been serious depression. In 1873, the total imports of C. were valued at \$10,503,600; in 1881, at \$19,305,000; in 1873, the exports were worth \$19,705,500; and in 1881, only \$18,150,000. The number of Spanish ships which entered C. 1881 was 2,751, with a tonnage of 722,865; of foreign ships, 1,015—tonnage, 412,873. The exports are wine, olive-oil, fruits, salt, and metals. The manufactures are glass, woolen cloth, soap, hats, leather, etc.

C. is one of the most ancient towns in Europe, having been built by the Phœnicians, under the name of Gaddir, 347 years before the foundation of Rome, or about B.C. 1100. It afterward passed into the hands of the Carthaginians, from whom it was captured by the Romans, who named it Gades, and under them it soon became a city of vast wealth and importance. Occupied afterward by the Goths and Moors, it was taken by the Spaniards in 1262. In 1587, Drake destroyed the Spanish fleet in the bay; nine years later, it was pillaged and burned by Lord Essex; in 1625 and 1702, it was unsuccessfully attacked by

other English forces. After the revolution of 1808, C. became the headquarters of the insurrectionary junta, by whose orders it was separated from the mainland. The French, 1810, Feb., commenced a blockade, which they vigorously persevered in, capturing several of the forts, until 1812, Aug. 25, when the victories of the Duke of Wellington forced them to abandon it. The city was besieged and taken by the French 1823, and held by them till 1828. In the Spanish revolution of 1868, C. acted a noted part. Pop. (1887) 82,531; (1900) prov. 452,659; city, 69,382.

CADMEAN, a. *kăd-mě'ăn*, or **CADMIAN**, *kăd'mĭ-an*: relating to *Cadmus*, who is said to have introduced into Greece the sixteen simple letters of the alphabet, hence called *Cadmean* letters. **CADMEAN VICTORY**, a victory in which the conquerors suffer as much as their enemies—so named from the fable of *Cadmus*, who, by throwing money among the armed men who sought his life, caused them to fight and slay each other for its possession. See **CADMUS**.

CADMIA, *kăd'mĭ-a*: term applied to the crust formed in zinc furnaces, and which contains from 10 to 20 per cent. of cadmium.

CADMIUM, n. *kăd'mĭ-ŭm* [L. *cadmiă*, an ore of zinc]: metal which occurs in zinc ores, and, being more volatile than zinc, rises in vapor, and distils over with the first portions of the metal: zinc ore was formerly called C.: see **ZINC**. C. is represented by the symbol Cd, has the atomic weight 56—new system, 112—and the specific gravity 8.6. It is a white metal, somewhat resembling tin; is malleable and ductile; fuses at 442° F., and rises in vapor a little above 600°. C. was discovered 1818. It is rarely prepared pure, and is not employed in the arts as a metal, though one or more of its salts have been serviceable in medicine. The sulphide of C., CdS, occurs naturally as the mineral *Greenockite*, and when prepared artificially, is of a bright yellow color. It is known as **CADMIUM YELLOW**, and is of great value to the artist. A great variety of tints are produced by mixing it with white-lead. Much of what is sold as Naples Yellow (q.v.) is thus prepared; but the genuine Naples Yellow has a greenish tint, which renders it easily distinguishable from the imitation. Cadmium Yellow, however, has many valuable qualities, which are causing it rapidly to supersede Naples Yellow.

CADMUS, *kăd'mŭs*: in legend (according to Apollodorus and others), son of Agenor and Telephassa, and brother of Europa. When the latter was carried off by Zeus, he and his brothers, as also their mother, were sent in quest of her, with injunctions from Agenor not to return without her. Their search was vain, and the oracle at Delphi told C. to relinquish it, and to follow a cow of a certain kind which he should meet, and build a city where it should lie down. He found the cow in Phocis, followed her to Bœotia, and built there the city of Thebes, about B.C. 1550. The myth of C., however, like other early Greek myths, abounds in contradictions, and it is impossible to disen-

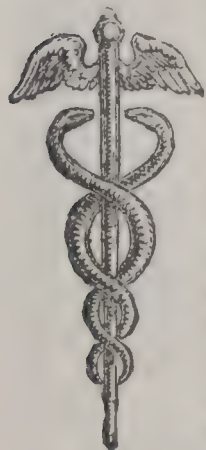
CADOUDAL—CADUCEUS.

tangle historical facts from the meshes of this fable. To C. is ascribed the introduction into Greece of an alphabet of 16 letters derived from Egypt or Phœnicia, and the discovery of brass, or introduction of its use.

CADOUDAL, *kă-dô-dâl'*, **GEORGE**: a leader in the Chouan or Royalist war in Brittany: 1771–1804, June 25; b. near Auray, Lower Brittany; son of a miller. He was among the first to take up arms against the Republic, and soon acquired great influence over the peasants. Captured in 1794, he was sent as a prisoner to Brest, whence he soon made his escape, imprisonment having only increased his loyal ardor. Annoyed at the dissensions between the Vendean generals and the emigrant officers, and the disasters consequent thereon, C. organized an army in which no noble was permitted to command, and which Hoche, with all his great military talents, was unable to subdue or disperse. In 1799, C. was the soul of the conspiracy to overthrow the First Consul, and place a Bourbon on the throne; but the events of the 18th Brumaire disarranged the plans of the conspirators. Bonaparte recognized C.'s energy and force of character, and offered to make him a lieut.-gen. in his army, which offer C. refused, as well as another of a pension of a hundred thousand francs, if he would only consent to remain quiet. Bonaparte attempted to arrest him, but he fled to England, where, 1802, he conspired with Pichegru for the overthrow of the First Consul. With this design he went to Paris, but was arrested, condemned, and put to death. C. was a man of stern honesty and indomitable resolution. 'His mind was cast in the true mold; in my hands he would have done great things,' was Napoleon's estimate of him.

CADRE, n. *kă-dr* [F. *cadre*, a frame—from It. *quadro*, a square]: the framework or fourth part of a thing; a skeleton; a body wanting bone and sinew to make it effective; in *mil.*, the frame or skeleton of a regiment, as after the Indian mutiny when the sepoy of certain regiments mutinied, the officers and men, if any remained, were styled the *cadres* of them.

CADUCEAN, a. *kăd'ũ-sě'ăn* or *kă-dũ'sě-ăn* [L. *caducĕŭm*, a herald's staff: It. *caduceo*: F. *caducée*]: belonging to Mercury's *caducĕŭs* (q.v.).



Caduceus.

CADUCEUS, *ka-dũ'sě-ŭs*: in *myth.*, the winged staff of Mercury, or Hermes, as he was called by the Greeks, which was supposed to give the god power to fly. The C. in the actual world was the staff or mace carried by heralds and ambassadors, from which, no doubt, it came to form one of the attributes of the messenger of the gods. Originally, it was simply an olive-branch, the stems of which were afterward formed into snakes, in accordance with several poetical tales invented by the mythologists. One of these was to the effect that Mercury, having found two snakes fighting, divided them with his rod, and that thus they came to be used as an emblem of peace. Many miraculous virtues were

CADUCIBRANCHIATE—CÆCILIA.

ascribed to the caduceus. On the coinage of antiquity, the C. is often given to Mars, who holds it in the left hand, a spear being in his right, to show how peace and war alternate. It is also seen in the hands of Hercules, Bacchus, Ceres, Venus, etc. Among the moderns, the C. is used as an emblem of commerce, over which Mercury was the presiding divinity.

CADUCIBRANCHIATE, *kă-dû'si-brăng'hî-ăt* [L. *cădūcus*, falling off; and Eng. *branchiate*]: applied to those amphibians in which the gills fall off before maturity is reached.

CADUCOUS, a. *kă-dû'kûs* [L. *cadūcûs*, falling—from *cado*, I fall]: falling early, as a leaf; having a tendency to fall off; denoting parts of an animal that fall off during life.

CADWALADER, *kăd-wôl'a-dēr*, JOHN: 1743–1786, Feb. 10; b. Philadelphia. He was member of the Penn. Convention of 1775 and of the Committee of Safety, and commanded the Philadelphia 'Silk Stocking Company,' of which nearly all the members became army officers. He was promoted to colonel, and in 1777 to brig.-gen.; took part in the battles of Trenton, Princeton, the Brandywine, Germantown, and Monmouth; organized the Md. Militia in the fall of 1777; called Gen. Conway to account for attacks on Washington, and wounded him in a duel; removed to Md., was a member of its legislature, and died at Shrewsbury, Maryland.

CÆCILIA, *sê-sîl'î-a* [L. *cæcus*, blind]: genus of reptiles, formerly placed among serpents, on account of their form though in their anatomical structure peculiarities we



Two-banded Cæcilia.

observed allying them to Batrachians, with which they are now ranked, the important fact having been ascertained of their breathing by gills when young, and undergoing a metamorphosis. The body is almost cylindrical or worm-like, the head small, the eyes very small, and nearly hidden by the skin; in some species, indeed, imperfect or wanting, upon which account the name C. was given to them, and an attempt has been made to transfer to them the English name Blindworm, commonly given to the *Anguis fragilis*. The skin is smooth, viscous, and annularly wrinkled, appearing naked, although, upon dissection, minute scales are found disposed between its wrinkles, at least in some species. The vertebræ are articulated as in fishes and in some of the other lower Batrachians, not as in serpents, and the skull is united to the first vertebra by two tubercles. The ribs are imperfectly developed, and much

too short to encircle the trunk.—The original genus *C.* has been subdivided, now forming a family, *Cæciliadæ*. The species are inhabitants of warm climates, and of marshy or moist places.

CÆCUM, n. *sē'kūm* [L. *cæcus*, blind]: in *anat.*, the blind gut, applied to a diverticulum or offshoot of the intestinal canal. CÆCAL, a. *sē'kāl*, pertaining to; having a closed end.

CÆCUM: a blind sac; that is, a sac or bag having only one opening, connected with the intestine of an animal. In man there is only one *C.*, very small, apparently not performing any important function, situated at the extremity of the small intestine where it terminates in the large intestine or colon. In many of the mammalia, however, and particularly in most of those which are herbivorous, it is comparatively large, and secretes an acid fluid resembling the gastric juice. It therefore appears that, where the nature of the assimilatory process is such as to require the detention of the food for a considerable time, this provision is made for it, in order that digestion may be more complete. The *C.* is entirely wanting in some quadrupeds, as in bats, and the bear and weasel families. Birds have two *cæca*, usually long and capacious in those that are omnivorous or granivorous; and their position is all that marks the division of the intestine into two parts, the small and the large intestine, or the *ileum* and the *colon*. In reptiles, a *C.* is very rare. Fishes have none in the position occupied by those of quadrupeds and birds, but many of them have *cæca* attached to the intestine at its uppermost part, and generally regarded as appendages of the stomach. The number of these *cæca* is, however, extremely various; sometimes there are only 2, and sometimes more than 100. The number is different even in very nearly allied species of the same family; thus, there are 6 in the smelt, but 70 in the salmon; 24 in the herring, and 80 in the shad. In some fishes, the *cæca* consist of large trunks ramified into smaller ones.

CÆDMON, *kēd'mūn* or *kūd'mūn*: d. abt. 680: first English writer of note who used his own Anglo-Saxon language. It has, indeed, been debated whether all the poems extant under his name are by him; the only remaining manuscript of the paraphrase is of the 10th c., and gives no indication of the authorship. But the substance of the work agrees well with that attributed to *C.* In Bede's account of his miraculous illumination, he was originally a cowherd, attached to the monastery of Whitby, and 'even more ignorant than the majority of his fellows, so that in the evenings, when the domestics assembled in the hall to recreate themselves with music after the labors of the day, Cadmon was frequently obliged to retire, in order to hide his shame when the harp was moved toward him.' One night, however, as he was sleeping in the stable-loft, a stranger appeared to him, and commanded him to sing. *C.* declared his ignorance, but the stranger would take no refusal, and imposed on the poor cow-herd the sublime task of hymning the glories of

creation. Suddenly, a poetic inspiration seized him, and he began to pour forth verses. When he awoke from his dream, the words remained in his memory, and were recited by him to others with new confidence. The Abbess Hilda, and the learned men who were with her in the monastery, immediately declared that he had received the gift of song from Heaven. He was now educated, became a monk, and spent the rest of his life in composing poems on the Bible histories and on miscellaneous religious subjects, many of which have been preserved, and are altogether in bulk nearly equal to the half of *Paradise Lost*, to parts of which some of them bear a striking resemblance. Satan's Speech in Hell is characterized by a simple yet solemn greatness of imagination, which may possibly have influenced at some period of his life the more magnificent genius of Milton.

CÆLATU'RA: see CHASING.

CÆLIUS MONS: see ROME.

CAEN, *kõng*: chief town in the dept. of Calvados, France—formerly cap. of Lower Normandy; on the left bank of the Orne, about 9 m. from its mouth, 122 m. w.n.w. of Paris. C. is built in the middle of a fertile plain; its streets are wide and clean, it has several fine squares, and many noble specimens of ancient Norman architecture. Among the best examples are the churches of St. Etienne, founded by William the Conqueror, and which contained his monument, erected by William Rufus, and destroyed by the Huguenots, 1562; La Trinité, called also *Abbaye aux Dames*, founded by Matilda, wife of the Conqueror; St. Nicholas, now a cavalry fodder-store; St. Pierre, and St. Jean. The castle, founded by the Conqueror, and finished by Henry I. of England, was partially destroyed, 1793. There are several beautiful promenades in the city, which has manufactures of lace, blonde, crape, cutlery, cotton-yarns; breweries, dye-works, wax-bleaching, and ship-building yards. Its Angora gloves, made from the unwashed, undyed fur of Angora rabbits, which are reared in the district, are celebrated. Quarries in the neighborhood produce an excellent stone, called Caen Stone (q.v.). Trade is facilitated by a maritime canal connecting the port with the sea, also by the railway connecting it with the Paris and Rouen line; those to Cherbourg, Tours, and Honfleur, and that to Flers, opened 1867, which affords C. communication with Granville. Nothing is known of C. before the 9th c. It was a place of importance in 912, when it came into the possession of the Normans, under whom it increased rapidly. William the Conqueror and his queen made it their residence, and greatly improved it. In 1346, it was taken and pillaged by the English, who again captured it, 1417, and held it till 1450, when the French compelled them to surrender. During the revolution of 1793, several of the Girondist chiefs, proscribed by the Jacobins, went to C., and organized a revolt against the Mountain, which proved unsuccessful. Pop. (1901) 44,794.

CAEN STONE: building stone from the neighborhood

CAËRE—CAERMARTHEN.

of Caen, Normandy. The region has been celebrated for its stone-quarries from a very early period. The excellence of the stone, and the facility of transport by sea, led to its extensive use in England in the 15th and 16th c. In 1460 the Abbot of Westminster obtained a license to import C. S. for the repairs of the monastery. Later it became a regular article of importation, and in 1582 it was rated at the custom-house at 6s. 8d. the ton. Winchester and Canterbury cathedrals, Henry VII.'s Chapel at Westminster, and many country churches, are built of C. S., which is still frequently used in England, and to some extent in the United States. The stone, which usually has a somewhat creamy color, is an oolite, resembling Stonesfield slate, but without its slaty structure. The quarries are subterranean, and the stone is brought up through vertical shafts in blocks 8 or 9 ft. long, and about 2 ft. thick.

CAËRE: see CERVETERÉ.

CAERLEON, *kér-lē'on* (Castle of the Legion): small ancient town in Monmouthshire, England, on the right bank of the Usk, 2 m. n.e. of Newport. It is the Isca Silurum of the Romans, supposed to have been cap. of the Roman province Britannia Secunda, now Wales, and the residence of the famous King Arthur. It was the seat of an ancient archbishopric, which was removed to St Davids about A.D. 519. An abbey of Cistercian monks existed here before the Reformation. C. was an important place in the 12th c., but was afterward ruined by the frequent wars between the Welsh and Anglo-Saxons. Many Roman relics have been found here, as aqueducts, baths, pavements, altars, tiles, coins, inscriptions, and statues; many of the smaller antiquities are deposited in a museum in the town; besides half-melted ore and cinders, and the remains of a fortress, with walls 12 ft. thick and 1,800 yards long, and of an amphitheatre, called King Arthur's Round Table, 222 by 192 ft. in size. The chief occupation is the manufacture of tin-plates. Pop. abt. 1,500.

CAERMARTHEN, *kér-mâr'thén* (Welsh, *Caer Fyrddyn*, the *Maridunum* of Ptolemy): seaport town, cap. of Caermarthenshire, s. Wales, on the right bank of the Towy, 9 m. from Caermarthen Bay. It has a picturesque situation, but the streets are irregular, steep, and often narrow. The Towy is navigable for vessels of 200 tons up to the town, and salmon and sewin are caught in the river. There are tin and iron works near. C. exports tin-plates, cast-iron, timber, marble, bark, slates, lead ore, bricks, grain, butter, and eggs. The Welsh language is used in most of the churches. There is a college for Welsh teachers. C. is a county borough, having a separate jurisdiction from the shire. It unites with Llanelly in returning one member to parliament. Near C. are the remains of two Roman camps. In the 5th c. Merlin, the Welsh prophet, is said to have been born here. It was long the residence of the native princes of s. Wales. Caermarthen Castle often changed hands in the contests of the Welsh chiefs with

each other, and in the subsequent wars with the Saxons and Normans. Pop. of C. 10,512; (1891) 10,514.

CAERMARTHENSHIRE, *kér-már'thén-shér*: maritime county in s. Wales, on the Bristol Channel; bounded n. by Cardigan, from which it is separated by the Teify; e. by Brecknock; s. by Glamorgan and Caermarthen Bay; and w. by Pembroke. It is the largest of the Welsh counties; length, 53 m.; greatest breadth, 33 m.; 974 sq. m., nearly a third of which is waste. The country is mountainous in the n. and e., and is characterized by productive though narrow valleys and deep, wooded glens. Caermarthen Van or Beacon rises 2,596 ft., the greatest elevation in the county. The coast of C. is marshy, and is on Caermarthen Bay, which washes also small portions of the coasts of Glamorgan and Pembroke. The bay is 17 m. across, 10 m. deep, 35 in circuit, and receives the rivers Taff or Tave, Towy, and Lhoughor. The chief rivers of C. are the Towy, Cothy, Taff, and Teify. The Towy has a course of 60 m., of which 50 are in Caermarthenshire. It yields plenty of salmon, sewin, trout, eels, and lamprey, and is navigable for its lower 9 m. On this river is the celebrated vale of the Towy, 30 m. long, with an average breadth of 2 m. C., n. and w. of the Towy, comprising three-fourths of the county, consists of lower Silurian clay-slate and grauwacke. In the s.e. corner of the county is a band of carboniferous limestone and grit, to which succeeds a small part of the s. Welsh coal-field of Glamorgan and Monmouth, chiefly composed of stone-coal and culm. The mineral productions of the county are iron, coal, copper, lead, slates, lime, dark-blue marble. These, with tinned iron, grain, cattle, horses, sheep, and butter, are exported. The climate of C. is mild, but moist; the soil is stiff and poor in the uplands, affording pasturage for small cattle; but the rest of the county is well wooded, and in the s. part along the rivers very fertile. Oats and barley are the chief crops. The chief towns are Caermarthen (county town), Llanelly, Llandeilo-vawr, Llandovery, Newcastle-in-Emlyn. Chief manufactures are woollens and hides. C. sends two members to parliament. The county contains so-called Druidical remains and Roman roads, besides many baronial and ecclesiastical ruins. In this county originated the 'Rebecca' riots, which in s. Wales, 1843-4, were directed against the turnpike-gates. Pop. (1871) 115,710; (1881) 124,861; (1891) 130,574; (1901) 135,326.

CAERNARVON, *kér-nar'von* (*Caer-yn-ar-Fon*, Fort opposite Mon or Anglesea): parliamentary and municipal borough and seaport in n. Wales, cap. of Caernarvonshire; near the s. end of the Menai Strait, on the right bank of the Seiont, 245 m. n.w. of London. C. has a castle at the w. end of the town, the building of which was begun by Edward I., 1284. It is one of the noblest ruins in the kingdom, the walls being still entire, and inclosing an oblong of three acres. The walls are 7 to 9 ft. thick, pierced by a covered gallery, with loopholes for arrows. There are 13 embattled towers with five, six, or eight sides, and sur-

CAERNARVONSHIRE.

mounted by turrets. The gateway under the great square tower has four portcullises. The town itself was formerly surrounded by walls and round towers. These walls, with several of the gates, still stand, but are now within the town. The streets are narrow, but regular, and at right angles to each other. In the churches and chapels, the services are in Welsh and English. C. unites with Pwllheli, Nevin, Criccieth, Conway, and Bangor in returning one member to parliament. In 1880, 2,256 vessels, with a burden of 149,706 tons, entered, and 2,389 vessels, with a burden of 172,021 tons, cleared the port, chiefly small-craft and steamers to and from Liverpool. The harbor admits ships of 400 tons. Chief exports are copper ore, coal, and slates. There is also a great iron and brass foundry. C. is a bathing-place, and is much frequented by tourists on account of its vicinity to the grandest scenery in n. Wales. Many families of the upper ranks reside in and around the town. Half a mile from C. are the remains, covering seven acres, of Segontium, or *Caer Seiont*, a Roman station or city. Gold, silver, and copper coins and ornaments, and other Roman relics, have been found here. There is a Roman fort on the left bank of the *Seiont*, still almost complete, with walls 11 ft. high, and 6 ft. thick, and with parallel rows of holes 3 inches in diameter. C. was the seat of the native princes of n. Wales till 873. In 1284 was born here the first Anglo-Norman Prince of Wales, afterward the unhappy Edward II. In 1294, the town and castle were burned, and the English inhabitants massacred by the Welsh under Madoc, illegitimate son of Llewelyn, a native prince of Wales. From a rocky height near *Ūxbridge Hotel*, there is a fine view of *Snowdon* and the island of *Anglesea*. Pop. (1881) 10,237; (1891) 10,514.

CAERNARVONSHIRE, *kér-nar'von-shér*: maritime county in n. Wales, bounded n. by the Irish Sea; e. by Denbigh, with the Conway between; s. by Merioneth and Cardigan Bay; and w. by Caernarvon Bay and the Menai Strait, the latter separating it from *Anglesea*. It is 51 m. long; greatest breadth, 22 m.; average, 9; 544 sq. m., of which one-half is in pasture, and only one-fortieth in tillage. The surface is mountainous, and is traversed by the grandest ranges in s. Britain, and it is the highest and most mountainous county in n. Wales. The *Snowdonian* or chief range runs through the middle of the greatest length of the county, from s.w. to n.e., and is very bold and rocky. It attains its greatest elevation in *Snowdon* (q.v.), 3,571 ft., in the centre of the county, and the highest mountain in s. Britain. *Caernarvon Bay* is 30 m. across, 15 long, with 2 to 30 fathoms water, and communicates with the Irish Sea through the *Menai Strait*, which is 17 m. long, and one-third m. to 4 m. broad. The rivers of C. are numerous, but small, from the nearness of all parts of the county to the sea. The *Conway*, navigable 10 m., which runs along the e. border, is the chief. Almost all the streams flow through small lakes or tarns—of which there are 50 or 60 in the county—around the central or *Snowdonian* group of mountains. There are many fine cataracts on these streams. The mineral products of C. are

CÆSALPINIA—CÆSALPINUS.

copper, lead, zinc, coal, roofing and writing slates, slabs, chimney-piers, honestone. The slate-quarries employ many thousand workmen. The climate is mild in the peninsular part of C., but severe among the hills. Large numbers of black-cattle are reared; the sheep are numerous but small. Wheat, oats, barley, and potatoes are raised in the valleys. The chief towns are Caernarvon (the county town), Bangor, Pwllheli, Conway, Nevin, and Criccieth. In addition to the above boroughs, several flourishing towns have recently sprung into existence in the county—Llandudno, Tremadoc, and Bethesda being the principal. It returns two members to parliament—one for the county, and one for the six chief towns. Connected with C. is the Chester and Holyhead railway, on the great route from London to Dublin, which crosses into Anglesea by the Britannia Tubular Bridge over the Menai Strait. C. contains the remains of British or Celtic camps and hill-forts, especially around Snowdon, several dolmens and stone circles, and some ancient castles. The Snowdonian mountains were long the stronghold of the Welsh against the Romans, Saxons, and Normans in their efforts to subjugate Wales, and here the Welsh were at last defeated in 1283 by Edward I. Pop. (1901) 125,669.

CÆSALPINIA, *sē-zāl-pīn'ī-a*: genus of trees of the nat. ord. *Leguminosæ* (q.v.), type of the sub-order *Cæsalpinieæ*. This sub-order is characterized by irregular flowers, which are not papilionaceous (q.v.), and contains upward of 700 known species, among which many are notable for purgative properties, as Senna (q.v.); some produce eatable fruits, as the Tamarind (q.v.), the Carob (q.v.), and the West Indian Locust Tree (q.v.); some yield resinous and balsamic products, as Copaiva (q.v.), Aloeswood (q.v.), etc.; some produce important dye-woods, as Logwood (q.v.), Brazil Wood (q.v.), Camwood (q.v.), etc.; and some are trees of great size, and very valuable for their timber, as the Purple-heart (q.v.) and the Wallaba (q.v.), trees of Guiana. The sub-order generally belongs to warm climates.—The genus C. contains a number of species, trees with pinnate or bipinnate leaves, natives of the warm parts of Asia and America, which yield the Brazil Wood, Pernambuco Wood (see BRAZIL WOOD), and Sappan Wood (q.v.) of commerce, also the astringent pods called Dividivi (q.v.), used in tanning.

CÆSALPINUS, *sēs-āl-pī'nūs*, or CÆSALPINO *chā-zāl-pē'no*, ANDREAS: 1519–1603, Feb. 23; b. Arezzo in Tuscany; naturalist. He was prof. of botany in the Univ. of Pisa, and from 1592 of medicine in the Sapienza College at Rome, and chief physician to the pope. He anticipated Harvey in discovering the circulation of the blood (see his first book, *Speculum Artis Medicæ Hippocraticum*), and Linnæus in the classification of plants; the latter called him the first orthodox or scientific botanist. His *De Plantis libri XVI.* appeared at Florence 1583. He also treated on the deepest philosophic subjects in his *Questiones Peripateticæ*, Rome, 1603. He died in Rome.

CÆSAR.

CÆSAR, *sē'zēr*: name of a patrician family of the *Julia Gens*, one of the oldest in the Roman state, claiming to be descended from Iulus, the son of Æneas. When or from what cause the surname of C. was acquired, is utterly uncertain. Spartianus, in his *Life of Ælius Verus*, mentions four different opinions respecting its origin: 1. That the word signified an elephant in the language of the Moors, and was given as a surname to one of the Julii because he had killed an elephant; 2. That it was given to him because he had been cut (*cæsus*) out of his mother's womb after her death; 3. Because he had been born with a great quantity of hair (*cæsaries*); or, 4. Because he had azure-colored eyes (*cæsi*). Who was the original Cæsar of the gens, is not known; the first mentioned in history is Sex. Julius Cæsar, prætor B.C. 208. The greatest individual of the family, and one of the greatest men in history, was CÆSAR, CAIUS JULIUS (q.v.).

CÆSAR, CAIUS (or rather GAIUS) JULIUS, Consul and Dictator of Rome: conqueror: B.C. 100, July 12—B.C. 44, Mar. 15; son of a Roman pretor of the same name. Two circumstances conspired to determine his sympathies in favor of democracy, and against a republican oligarchy: the first was the marriage of his aunt Julia with Caius Marius; the second, his own marriage, B.C. 83, with Cornelia, daughter of L. Cinna, one of the principal enemies of Sulla. The anger of the dictator at this cost C. his rank, property, and almost his life itself. Feeling that he would be safer abroad for a time, he went to Asia, B.C. 81; but on learning the death of Sulla (B.C. 78), he hurried back to Rome, where he found the popular party in a state of great ferment, and anxious to regain what it had lost under the vigorous despotism of the aristocratic dictator. C., however, took no part in the attempts of Lepidus to overthrow the oligarchy; but he showed his political leanings by prosecuting (B.C. 77) Cn. Dolabella—a great partisan of Sulla—for extortion in his province of Macedonia. To improve his eloquence, he went to Rhodes to study under the rhetor Apollonius Molo. In B.C. 74, he returned to Rome, where he had been elected pontifex, and now for the first time threw himself earnestly into public life. In B.C. 70, he attached himself to Pompey, whose political actions at this time were decidedly democratic. In B.C. 68, C. obtained a questorship in Spain. On his return to Rome (B.C. 67), he married Pompeia, a relative of Pompey, with whom he was daily becoming more intimate. In B.C. 66 he was elected to the curule ædileship, and lavished vast sums of money on games and public buildings, by which he increased his already great popularity. For the next few years, C. is found steadily skirmishing on the popular side. In B.C. 63 he was elected pontifex maximus, and shortly



after, prætor. During the same year occurred the famous debate on the Catiline conspiracy, in which the aristocratic party vainly endeavored to persuade the consul, Cicero, to include C. in the list of conspirators. In B.C. 62, Pompey returned from the East, and disbanded his army. Next year, C. obtained the province of *Hispania Ulterior*. His career in Spain was brilliant and decisive. On his return, he was elected consul, with M. Calpurnius Bibulus. Shortly before the passing of the agrarian law (B.C. 59), C., with rare tact and sagacity, had reconciled the two most powerful men in Rome, who were then at variance, Pompey and Crassus, and had formed an alliance with them, known in history as the *First Triumvirate*. Both of these distinguished men aided C. in carrying his agrarian law; and to strengthen still further the union which had been formed, C. gave Pompey his daughter, Julia, in marriage, though she had been promised to M. Brutus; while he himself also married Calpurnia, daughter of L. Piso, his successor in the consulship. On the expiry of his term of office, he obtained for himself, by the popular vote, the province of *Gallia Cisalpina* and *Illyricum* for five years, to which the senate added—to prevent the popular assembly from doing so—the province of *Gallia Transalpina*. Nothing could have been more favorable for C.'s aims. He had now an opportunity of developing his extraordinary military genius, and of gathering round him an army of veterans, whom perpetual victory should inspire with thorough soldierly fidelity and devotion to his person. This was the very thing he wanted to give him a reputation equal to that of his coadjutors, Pompey and Crassus, whom, in genius, he far surpassed. Leaving, therefore, the political factions at Rome to exhaust themselves in petty strifes, C., in B.C. 58, after the banishment of Cicero, repaired to his provinces, and during the next nine years conducted those splendid campaigns in Gaul, by which, had he done nothing else, he would have 'built himself an everlasting name.' C.'s first campaign was against the Helvetii, whom he totally defeated near Bibracte (Autun). Out of 368,000 only 110,000 remained. These were commanded by C. to return home, and cultivate their lands. The eyes of the Gauls were now turned upon the new conqueror. His help was solicited, among others, by Divitiacus, an Æduan chief. This involved C. in a second war with a German prince, named Ariovistus, who was utterly overthrown; and now C., having in the course of one campaign successfully concluded two important wars, led his troops into winter quarters.

Next year (B.C. 57) occurred the Belgic war, in which C. successively routed the Suessiones, Bellovaci, Ambiani, and Nervii, who, alarmed at the progress of the Roman arms, had entered into alliance with each other against the invaders. When the senate received C.'s official dispatches, it decreed a thanksgiving of 15 days—an honor never previously granted to any general. During the winter and the spring following, C. stayed at Lucca; and after spend-

ing large sums of money in hospitality, and in other ways less praiseworthy, he departed for Gaul, where the flames of war had burst out in the northwest. The Veneti, a maritime people of Brittany, were the chief instigators of the insurrection. C.'s plans were laid with consummate skill, and were crowned with the most splendid success. The Veneti were totally defeated, and most of the other Gallic tribes were either checked or subdued. C. wintered in the country of the Aulerci and Lexovii (Normandy), having, in the course of three campaigns, conquered Gaul. Next year (B.C. 55) Crassus went to Syria, and Pompey to Spain, while C.'s provincial government was prolonged for five years. He now undertook a fourth campaign against two German tribes who were about to enter Gaul. He was again successful; and pursuing the fleeing enemy across the Rhine, spent 18 days in plundering the district inhabited by the Sigambri. He next invaded Britain, about the autumn; but after a brief stay in the island, returned to Gaul. The Roman senate, astonished at his hardihood and his successes in regions where no Roman army had ever been before, accorded him a public thanksgiving of 20 days. In B.C. 54, C. opened his fifth campaign by a second invasion of Britain. On his return to Gaul, C. was compelled—on account of the scarcity of corn, arising from drought—to winter his army in divisions. This naturally aroused the hopes of the Gauls, who thought the time had come for recovering their independence. An insurrection broke out in the n.e. of Gaul, which was at first partially successful, but was ultimately crushed. C. resolved to winter at Samarobriva (Amiens), in the vicinity of the malcontents. In B.C. 53, C. commenced his sixth campaign. It was chiefly occupied in crushing a second insurrection of the Gauls. C. now returned to northern Italy, that he might be able to communicate more easily and securely with his friends at Rome. That city was gradually becoming more anarchic, the evils of weak government more apparent; the hour for decisive action seemed to be approaching, and doubtless C.'s heart beat with expectation of the mighty future, when all at once the plot that Fate was weaving in his favor, appeared to be completely marred by a tremendous rebellion over the whole of Gaul, headed by a young warrior named Vercingetorix. It was in the dead of winter when the news came to C., who instantly saw that, at all hazards, he must preserve his fame and his army. Leaving, therefore, Pompey to succeed at Rome, he hurried to meet the insurgent hordes. His great difficulty was to collect his scattered legions. First crossing, with some Cisalpine and provincial troops, the mountains of Auvergne, though they lay six feet deep in snow, he suddenly appeared among the Arverni, who, terrified at his unexpected approach, sent for their chief, Vercingetorix, to come to their assistance. This was what C. wished. After some wonderful exhibitions of military skill and numerous successes, Vercingetorix was shut up in Alesia (Alise in Burgundy) with all his infantry. C. besieged him, and

though harassed by nearly 300,000 Gauls without, who attempted, but in vain, to break through the well-defended Roman lines, forced Vercingetorix to capitulate. Many of the tribes now hastened to submit to C., who prudently determined to winter among the vanquished. The senate, of course, voted him another public thanksgiving. Next year (B.C. 51), C. proceeded to quell the tribes who still held out. This he accomplished, and having in addition reduced the whole of Aquitania, passed the winter of his eighth campaign at Nemetocenna, in Belgium, where he spent the time both in a magnanimous and politic manner. The Gallic princes were courteously and generously treated; the common people were spared the imposition of further taxes, and everything was done to render it possible for him to visit Italy with safety in the spring. This he did, and took up his residence at Ravenna, where he was informed of everything that was going on by the tribune C. Curio. There can be no doubt that at this moment he was the most popular man in the state, while his soldiery were devoted to him with a loyalty as enthusiastic as that which Bonaparte inspired when fresh from his Italian victories.

Meanwhile, Pompey, whose vanity could not endure the greatness of C., had been gradually veering round again to the aristocracy, whose dread of the new conqueror was hourly increasing. After much futile diplomatic finessing on all sides, the senate carried a motion 'that C. should disband his army by a certain day; and that if he did not do so, he should be regarded as an enemy of the state.' The tribunes, Mark Antony and Q. Cassius put their veto on this motion; but they were violently driven out of the senate-chamber, and fearing for their lives, they fled to C.'s camp. The senate, in the madness of their terror, now declared war, and intrusted the conduct of it to Pompey, whose pride in the invincibility of his military prowess hindered him from taking the necessary measures for the defense of the state. He fancied that his name would bring thousands to his standard, and he was even led to believe that C.'s troops were willing to desert their general: the result of which delusion was, that when hostilities formally commenced, he had hardly any soldiers except two legions which had recently been in the service of his rival. C., on the other hand, perceiving that the time for decisive action had at length come, harangued his victorious troops, who were willing to follow him anywhere; crossed the Rubicon (a small stream which separated his province from Italy proper), and moved swiftly, amid the acclamations of the people, toward Rome. Pompey fled to Brundisium, pursued by C., but contrived to reach Greece in safety, B.C. 49, Mar. 17. The Italian cities had everywhere gladly opened their gates to the conqueror as a deliverer. In three months, C. was master of all Italy.

C. next subdued Pompey's legates in Spain, who were at the head of considerable forces. On his return, he took Massilia, where he learned that he had been appointed

dictator of the republic—a function which at this time he retained only for 11 days, but these were honorably distinguished by the passing of several humane enactments. Pompey, now thoroughly alive to the magnitude of his danger, had gathered in Egypt, Greece, and the East, a powerful army, while his fleet swept the sea. C, however, crossing the Adriatic at an unexpected season, made a rush for Dyrrhachium, where Pompey's stores were; but was nevertheless outstripped by his opponent. Pompey intrenched his army on some high ground near the city, where he was besieged by C. The first encounter was favorable to Pompey, who drove back C.'s legions with much loss. The latter now retreated to Thessaly, followed by his exulting enemies. A second battle ensued on the plains of Pharsalia, B.C. 48, Aug. 9. Pompey's army was utterly routed; Pompey himself fled to Egypt, where he was murdered: see POMPEY.

No sooner had the news reached Rome, than C. was again appointed dictator for a year, and consul for five years. He was invested with tribunicial power for life, and with the right of holding all the magistrical comitia except those for the election of the plebeian tribunes. He did not, however, return to Rome after the battle of Pharsalia, but went to Egypt, then distracted by the disputes regarding the succession. Out of love for Cleopatra (who subsequently bore him a son), he entered upon the 'Alexandrine war,' in which he was successful, and which he brought to a close B.C. 47, Mar. He next overthrew a son of Mithridates, near Zela, in Pontus, Aug. 2, and arrived in Rome in Sep. He was once more appointed dictator, and the property of Pompey was confiscated and sold. Before the close of the year, he had set out for Africa, where his campaign against the Pompeian generals, Scipio and Cato, was crowned with victory at the battle of Thapsus, B.C. 46, Apr. 6. Cato committed suicide at Utica, and with such irresistible celerity was the work of subjugation carried on, that by the end of the summer, C. was again in Rome. Now occurred that display of noble and wise generosity which proves C. to have been possessed of a magnanimous nature. He was not a man that could stoop to the vulgar atrocities of Marius or Sulla, and so he majestically declared that henceforth he had no enemies, and that he would make no difference between Pompeians and Cæsarians. His victories in Gaul, Egypt, Pontus, and Africa, were celebrated by four great triumphs, during which the whole Roman populace was feasted and fêted by the magnificent liberality of the dictator.

He now proceeded to check, by wholesome enactments, as far as in him lay, the social evils which had long flourished in the city. During the year B.C. 46, also, he conferred a benefit on Rome and on the world by the reformation of the calendar, which had been greatly abused by the pontifical college for political purposes. After quelling an insurrection which now broke out in Spain, where Pompey's sons, Cneius and Sextus, had collected an army, he received the title of 'Father of his Country' and also of *imperator*, was

CÆSAREA.

made dictator and *præfectus morum* for life, consul for 10 years; his person was declared sacred, and even divine; he obtained a body-guard of knights and senators; his statue was placed in the temples; his portrait was struck on coins; the month Quintilis was called Julius in his honor; and on all public occasions he was permitted to wear the triumphal robe. He now proposed to make a digest of the whole Roman law for public use, to found libraries for the same purpose, to drain the Pontine Marshes, to enlarge the harbor of Ostia, to dig a canal through the Isthmus of Corinth, and to quell the inroads of the barbarians on the eastern frontiers; but in the midst of these vast designs he was cut off by assassination on the Ides (15th) of March, B.C. 44. This crime was the greatest disaster that could have befallen the Roman world, as subsequent events showed. Of the 60 aristocrats who were in the conspiracy, many had partaken of C.'s generosity, and all of his clemency. A few, like Brutus, out of a weak and formal conscientiousness, based on theory rather than insight, were probably offended by C.'s desire to change the form of government into a hereditary monarchy; but the most, like Cassius, were inspired by a spleenful hatred of the dictator, and the base ambition of regaining power at all hazards.

C., who was 56 years of age when he was murdered, was of a noble and kingly presence, tall of stature, and possessing a countenance, which, though pale and thin with thought, was always animated by the light of his black eyes. He was bald-headed (at least in the latter part of his life), wore no beard, and though of a rather delicate constitution naturally, he ultimately attained the most vigorous health. His besetting sin was sensuality; but while no detraction can be permitted from the criminality of his conduct in this respect, it may yet be remembered that it was as much the sin of the times in which he lived as his own, and that the superlative grandeur of his position gave a prominence to his licentiousness which a more humble lot would have escaped. His intellect was marvellously versatile. In everything he excelled. He was not only the first general and statesman of his age, but he was—excepting Cicero—its greatest orator. As a historian, he has never been surpassed and rarely equalled in simplicity and vigor of style, and in the truthfulness with which he narrates events of which he was an eye-witness. He was, in addition, a mathematician, philologist, jurist, and architect, and always took great pleasure in literary society. Most of his writings have been lost, though their titles are preserved; but we still possess his invaluable *Commentarii* (generally known as 'Caesar's Commentaries on the Gallic and Civil Wars'). The *editio princeps* was printed at Rome 1449. C.'s life was formally written in ancient times by Suetonius and Plutarch. There are modern lives by Delorme, Napoleon III. (1865), and J. A. Froude (1879).

CÆSAREA, *sēs a-rē'a* (*Turris Stratonis*), called by the natives 'Kaisari yeh': once proud and splendid seaport, perhaps one of Herod's most magnificent works—a Grecian town with its temples, palaces, amphitheatre, baths, etc.,

CÆSAREĀ PHILIPPĪ—CAFFEINE.

imported into Syria—on the coast of Syria, 95 m. s. of Beyrout, and 37 m. n. of Jaffa.

In A.D. 65, Gessius Florus, the worst of all the petty tyrants that had afflicted Judæa, was appointed gov. of C. About that time, a terrible revolution, which commenced at C., broke out all over Judæa. It arose from a dispute between the Syrian and Jewish citizens of C. as to which of them the city really belonged to; and some idea may be formed of the extent of the insurrection from the fact, that above 20,000 Jews were massacred in C. in the space of one hour; 13,000 in one night at Scythopolis; 50,000 at Alexandria; 8,000 at Joppa; and 10,000 at Damascus.

C. was occupied by the Crusaders; after them, it seems to have gradually decayed into nothingness. It is now a heap of half-buried ruins, with a few miserable stone houses inhabited by fishermen.

CÆSAREĀ PHILIPPĪ, *f'ĩ-lĩp'ĩ* (*Panium*): town about 20 m. n. of the Sea of Galilee; mentioned Matt. xvi. 13. It was distinguished from the Cæsarea on the coast of Syria by the appendage of 'Philippi,' given to it in honor of Philip the Tetrarch, who repaired the city. It is now a heap of ruins, overgrown with bushes and grass.

CÆSARIAN, or CÆSAREAN: see CESARIAN.

CÆSIUM, n. *sě'zhĩ-ũm* [L. *cæsĩũs*, bluish-gray]: an elementary body forming an alkaline metal of a white color, first discovered in mineral water in 1860—so called from the bluish-gray lines produced by it in the spectrum (see RUBIDIUM). CÆSIOUS, a. *sě'zhĩ-ũs*: bluish-gray.

CÆSPITOSE: see CESPITOSE.

CÆSURA, n. *sě-zũ'rǎ*, or CES- [L. *cæsũra*, cutting or hewing off—from *cæsus*, cut off]: in *verse*, the resting of the voice on a syllable; in *Latin verse*, the *cæsura* divides the verse or line into two parts; a syllable cut off at the end of a foot, or at the end or middle of a line. CÆSU'RAL, a. *-rǎl*, pertaining to.

CAF, or KAF, *kǎf*: in Persian and Arabic legend, the mountain range that rims the world. 'From Kaf to Kaf' signifies from end to end of the earth.

CAFÉ, n. *kǎf'fǎ* [F. *café*, coffee—from Ar. *kahveh* or *ka-wah*]: a coffee-house. CAFFE'IC, a. *-fě'ĩk*, of or pertaining to coffee. CAFETIÈRE, *kǎf'tĩ-ěr'* [F.]: the coffee-biggin, a large utensil for making coffee clear and strong. CAFFEINE, n. *kǎf-fě'ĩn*, a bitter stimulating principle found in coffee, and also in tea: see COFFEE.

CAFFA: see KAFFA.

CAFFEINE, *kǎf-fě'ĩn*, or THEINE, *thě'ĩn* (C₁₆ H₁₀ O₄ N₄, 2HO): the alkaloid or active principle of Coffee (q.v.) and Tea (q.v.). When isolated, it forms beautiful white crystals, with a silky lustre, soluble in water, alcohol, and ether. It is present in coffee to the extent of about 1 per cent., and in ordinary or Chinese tea, from 2½ to 6 per cent., and is also found in Paraguay and Guiana teas. It may be extracted from coffee or tea by making a decoction in hot water, and adding acetate of lead, which causes a precipi-

CAFFER BREAD—CAGLIARI.

tate of caffeotannate of lead. When the latter is acted on by sulphuretted hydrogen, the lead is separated, and the C. left in solution. On evaporation of the liquid, and recrystallization from alcohol, the C. separates in crystals.

CAFFER BREAD, *kăf'fēr*: name of several species of *Encephalartos*, trees of the nat. ord. *Cycadaceæ* (q. v.), which, like many others of that order, have much starch in their stems, and afford food to the natives of s. Africa. They are called also Bread-trees.

CAFFERS: see KAFIRS.

CAFFRA'RIA: see KAFFRARIA.

CAFFRE, n. *kăf'fr* [Ar. *kâfir*, infidel]: one of a powerful race or tribe in s. Africa; a tribe n. of Afghanistan: also KAFIR, and KAFFIR. See KAFIRS.

CAFFRISTAN': see KAFIRISTAN.

CAFTAN, n. *kăf tăn* [Turk. *quaftân*: Russ. *kaftân*: F. *cafetan*]: a Persian or Turkish vest.

CAGAYAN SOOLOO, *kâ-ghî-ân' sô-lô'*: island of the Asiatic archipelago, lat. 6° 58' n., long. 118° 28' e. It is about 20 m. in circumference, well wooded and elevated.

CAGAYAN is the name also of a province, river, and lake on the island of Luzon, one of the Philippines.

CAGE, n. *kāj* [F. *cage*—from L. *cavēā*, a hollow place; a coop: Sp. *gavia*: It. *gabbia*]: a box for birds, generally made of wire-work; an inclosure for wild beasts; outer work of timber; the vessel for bringing up coals, etc., from pits: V. to shut up or confine. CA'GING, imp. CAGED, pp. *kājd*.

CAGLI, *kāl'yē* (anc. *Calles*): walled Italian town, province of Pesaro ed Urbino, 14 m. s. of Urbino. It is the seat of a bishop, and has a cathedral and several monasteries and churches, of which the Santo Domenico contains frescoes by Raphael's father. Leather manufacture is the chief business. Pop. over 10,000.

CAGLIARI, *kāl'yá-rē*: the southern province of Sardinia; 5,224 sq. m.; having four districts. It is a mountainous region, watered by several small streams; with mines of iron, silver, lead, and antimony, and salt works on the coast. Cattle, grain, and lumber are the other products. Pop. (1901) 483,548.

CAGLIARI, *kāl'yá-rē*: cap. of the island of Sardinia, on the side of a hill, on the n.e. shore of a spacious bay, and on the s. coast of the island; lat. 39° 13' n., long. 9° 8' e. It has a spacious and safe harbor, defended by several forts, and is the emporium of all the trade of the island. The town contains many public buildings and churches, and has a university with 100 students; but its streets, for the most part, are very narrow, steep, and dirty. C. has a dockyard, and a good road was some years ago constructed from C. to Sassari, the second city in the island, and to some of the more considerable places. Steamers ply very frequently between C. and Genoa; and it is now in telegraphic connection with the continent. Pop. (1901) 53,747.

CAGLIARI—CAGLIOSTRO.

CAGLIARI, PAOLO, best known as *Paolo Veronese*: 1532-1588, Apr. 19; b. Verona: Italian painter of great eminence. He first studied under his uncle, Antonio Badile, a respectable artist, and afterward settled in Venice, where he rapidly acquired wealth and reputation. He had for contemporaries Titian and Tintoretto, and was held in equal admiration with these famous painters. The church of San Sebastiano, Venice, contains many of his productions, which are reckoned the most important of his earlier period—i.e., the period before he visited Rome, when he first became acquainted with the masterpieces of Raphael and Michael Angelo. The influence of the Roman school on his style was so happy, that, on his return, he received the honor of knighthood from the doge. C. is remarkable for the fertility of his imagination. His design is generally noble, his composition rich, and his execution truthful. In the invention of details, especially, he is inexhaustible, and often overloads his pictures with ornament. One peculiarity of his works is the frequent introduction of splendid architectural backgrounds, which, however, were painted generally by his brother Benedetto. The most celebrated of his productions is the *Marriage Feast at Cana of Galilee*, now in the Louvre, Paris. It is 20 ft. high, and 30 in length, and contains 130 figures. Notable also are *The Calling of St. Andrew to the Apostleship*, *The Feast of Simon*, and the *Presentation of the Family of Darius to Alexander*.

CAGLIOSTRO, *kâl-yos'tro*, Count ALESSANDRO DI (true name, GIUSEPPE BALSAMO): 1743, June 2—1795; b. Palermo, Italy, of poor parentage: notorious impostor, who travelled through Europe, and whose adventures afford considerable insight into the social characteristics of his times. Carlyle's picture of him when a boy—'brass-faced, vociferous, voracious'—is probably accurate, and already prophesies the bold and boisterous quack. When 13 years old he ran away from the seminary of St. Roch, and was afterward sent to a monastery at Cartagione. Here he became assistant to the apothecary of the monastery, and picked up that scanty knowledge of chemistry and medicine, which in after years was made the basis of an enormous imposition. His conduct in the monastery was in keeping with his character, but finding it too contracted a sphere for the development of his ambitious genius, he left it, or was ejected, and for a time led 'the loosest life' in Palermo. When 26 years old, he found it highly advisable to leave his native place. In company with a certain sage named Althotas, C. is vaguely represented as travelling first in some parts of Greece, Egypt, and Asia. At Rome, 'his swart, squat figure first becomes authentically visible in the Corso and Campo Vaccino. He lodges at the sign of the Sun in the Rotunda, and sells etchings there,' very hard up at this time. In Venice, 'the bull-necked forger' contrived to marry a very pretty woman named Lorenza Feliciana, who became a skilful accomplice in his schemes, and captivated many admirers, while C. picked their pockets. C. now made the tour of Italy with great success as

CAGLIOSTRO.

a physician, philosopher, alchemist, freemason, and necromancer. Next, he extended his career through some parts of Germany, and especially carried on a lively business in his 'elixir of immortal youth,' which became very popular among the ladies. By virtue of this fine medicine, the count assured his patients that he had already attained his 150th year, while his young and charming wife often talked affectionately of her son as 'a commander in the Dutch navy.' Through Courland, the count and his accomplice advanced prosperously to the court of St. Petersburg, where he seems to have first made a failure; for the Empress Catharine, aided by her Scotch physician, Rogerson, a keen-witted native of Annandale, who skeptically examined his famous 'Spagiric food,' and pronounced it 'unfit for a dog,' penetrated his real character, and made him the subject of a comedy. C. soon found it convenient to vanish. He appears next at Warsaw, discoursing on his pet Egyptian masonry, medical philosophy, and the ignorance of doctors, but he had the misfortune to be unmasked by a certain Count M. This, however, had little effect on the stupid credulity of C.'s dupes—belonging, it must be remembered to the upper classes, who in that age, according to Carlyle, were at once sensual, infidel, and superstitious—so that they persisted for a time in 'distending his pockets with ducats and diamonds,' which, however, his lavish dissipation soon scattered to the winds—for this prophet of a new physical and moral regeneration, and inventor of an 'invaluable pentagon for abolishing original sin,' was a desperate gambler. In 1780 he went to Strasbourg, and soon afterward was at Paris, still founding lodges of 'Egyptian freemasons,' holding nocturnal meetings for calling 'spirits from the vasty deep,' etc., and simulating the character and deeds of a philanthropist. From Paris he came over to England, where he was cordially received by the followers of Swedenborg. On his return to Paris (1785) he became distinguished at court, was intimate with the weak and credulous Cardinal Rohan, and played a prominent part in the affair of the Diamond Necklace (q.v.). This lodged him in the Bastille; but he cleared himself by a statement which gained credit, and, after being liberated, carried on his adventures once more in England, but feebly, his success now obviously diminishing, so that the count, in gloom and foreboding, disappeared from the island. But the market in Germany, too, was closed, a general distrust having been excited by the revelations of one of the count's dupes. Elsewhere, also, his dupes began to fail him. 'At Aix, in Savoy, there are baths, but no gudgeons in them;' at Turin, he is ordered off by the king; a similar fate befalls him at Roveredo; at Trent he is seen 'painting a new hieroglyphic screen,' which, however, attracts no more the gaping crowd; lower still, 'he pawns diamond buckles;' finally, his wayworn wife—in whom, perhaps, because of her womanhood, the enormous lie and quackery first breaks up—'longs to be in Rome by her mother's hearth, by her mother's grave, where so much as the

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shadow of refuge awaits her.' In 1789, May, he entered the city; on Dec. 29 the Holy Inquisition detected him founding 'some feeble ghost of an Egyptian lodge.' He was imprisoned, and condemned to death for freemasonry. His sentence was commuted to imprisonment for life in the fortress San Leon, where, in spite of his 'elixir of immortal youth,' he died. His wife ended her days in a convent. His *Mémoires Authentiques*, posthumously circulated in Paris, were *not* authentic. See Carlyle's *Miscellaneous Essays*, art. Count Cagliostro.

CAGNOLA, *kân-yo'lá*, LUIGI MARCHESE: 1759-1833; b. Milan; of an ancient and wealthy family: Italian architect. His master-works are two triumphal arches. The first is the famous *Arco della Pace*, in Milan, commenced 1807, not finished until 1838. It is of white marble, and, with the exception of the *Arc de l'Etoile*, in Paris, is both the largest and noblest structure of the kind in Europe, reaching a height of 78 ft. On the top of the arch is a bronze figure of Peace, in a car drawn by six horses, while the sides are richly adorned with innumerable bas-reliefs. The second forming the *Porta di Marenga*, or *Porta Ticinese*, also is a work of great beauty. Besides these may be mentioned the *Campanile* (Bell-tower) at Ugnano, in the Bergamese.

CAGOTS, *kă-gō*: tribe of men, of manners and customs akin to those of the gipsies, scattered through various parts of Bearn and Gascony, in France. They are usually thought descendants of the Visigoths, who remained in France after their defeat by Clovis, in the 5th c. Until the French Revolution of 1790, they received even worse treatment than that which generally falls to the lot of the remnants of conquered races. They were forced to wear a peculiar dress, were forbidden to practice all but the most menial trades, and were obliged to live isolated, either in separate villages or in separate quarters of the town. So complete was their estrangement from the other inhabitants, that they were forced to enter the churches by doors specially set apart for them. Since that Revolution, they have been placed, as regards the law, on an equal footing with other citizens, but socially they are still regarded as a degraded race. Their language has been, so far back as is known, a corrupt dialect of that spoken in the surrounding country; but their blue eyes, fair hair, and fair complexion, mark them out as ethnologically distinct, and speak to a Teutonic origin. From a great liability to the diseases afflicting cretins, probably caused by their exposed manner of life and insufficient nourishment, they were at one time erroneously thought to belong to that unfortunate class. Tribes, whose history and present condition greatly resemble those of the C., are to be found in Brittany, where they receive the name of 'Caqueux;' and in Poitou, Maine, and Anjou, where they receive the name of 'Coliberts.' See Michel's *Histoire des Races Maudites de la France* (1847), the bulletins of the *Société Anthropologique* (1871, etc.), and the work by Rochas (1877).

CAGSANA—CAIFA.

CAGSANA, *kág-sá'ná*: town near the s. extremity of the island of Luzon, Philippines. Pop. abt. 13,000.

CAHAWBA RIVER, *ka-haw'ba*: river of Ala. abt. 150 m. long. It rises in Jefferson co., flows s.w. and then s. through a coal region, and joins the Alabama river at Cahawba in Dallas co., 8 m. s.w. of Selma. It is navigable by small boats for 100 m.

CAHETÉ, or **CAETE**, *ká-ã'tā*: small town of Brazil, province of Minas Geraes, abt. 250 m. n. of Rio de Janeiro. The town is tolerably built, has some churches, a hospital, primary school, electoral college. Agriculture and mining are carried on. Pop. abt. 6,000.

CAHIR, *kāh'hér*: town in the county of Tipperary, Ireland, on the Suir, beautifully situated at the e. end of a valley between the Galtees and Knockmeledown Mountains, 8 m. n.w. of Clonmel. In the town is the seat of the Earl of Glengall, with a park which extends along the river for two miles below the town. Cahir Castle, an ancient irregular Norman structure of considerable extent, is on a rock on the left bank of the Suir. It was taken by the Earl of Essex, 1599, and by Cromwell, 1650: it has been lately restored. C. has extensive flour-mills, and there are large barracks near. Pop. (1891) 2,694.

CAHORS, *ká-ōr'* (anciently, *Divona*): town in the dept. Lot, France; on a small rocky peninsula, formed by a bend of the river Lot—here crossed by three bridges—about 60 m. n. of Toulouse. The streets of C. are steep and narrow, and present many specimens of antique architecture. It has a fine cathedral, and several Roman remains, including those of a magnificent aqueduct. There is an obelisk to Fénelon, who was a student at the university here. The town was taken and pilaged by Henri of Navarre, 1580. It has manufactures of cotton-yarn, woollens, leather, paper, glass, etc.; the district produces wine in considerable quantities. Pop. (1872) 11,416; (1881) 14,100; (1886) 14,169; (1891) 15,369.

CAICOS, *kī'kōse* or **CAYOS**, *kī'ōs*, or **KEYS** [see **KEYS**]: term applied to numberless rocky islets of the West Indies, generally with a reference to some more considerable island in the neighborhood. Thus, taking the Bahamas as an instance, there are the Keys of Providence, of Eleuthera, of Abaco, etc. But more specifically the name is often appropriated to the more southerly members of the group just mentioned—North, West, East, Grand, and other Keys together covering about 450 sq. m. They lie between 21° and 22° n. lat., having been transferred, with a local president, from the government of Bahama to that of Jamaica. The revenue is about \$40,000. The imports are valued at nearly \$150,000; and the exports (consisting chiefly of salt) at \$125,000. Pop. abt. 5,000.

CAIFA, *kī'fa*, or **HAIFA**, *hī'fa*: seaport on the coast of Syria, exactly opposite Acre, upon the spur of Mount Carmel, on the s. side of a wide semi-circular bay, four miles across. It is the ancient Hefa, or Sycaminopolis. It

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covers but a small space of ground, and contains no edifice of any note except a few minarets. The houses are of rough unhewn sandstone, plastered over with lime—the roofs flat. Pop. about 2,000—Moslems, Christians, and Jews. C., having a better anchorage than Acre, is fast taking the place of that city as a port. Consular agents from England, France, etc., have, within 20 years, been established at C.; and there is a flourishing German settlement. Several cargoes of barley, wheat, and sesame seed are yearly shipped at C., and exported to Great Britain and France. It is surrounded by beautiful gardens of palm, olive, orange, citron, fig, mulberry, and pomegranate trees.

CAILLIÉ, *kâ-e-yā'*, RENÉ or AUGUSTE: 1799, Sep. 19—1837, May 9; b. Mauzé, dept. of Deux-Sèvres: traveller. Having gone to Senegal, and engaged in trading with the natives, he learned, about 1826, that the Geographical Soc. of Paris had offered a premium of 10,000 francs to the first traveller who should reach Timbuktú. Provided with a stock of goods for barter, C. started from Sierra Leone, 1827, Mar. 22, and after some delay caused by illness, he reached the mysterious city, 1828, Apr., where he remained 14 days. On leaving Timbuktú, he accompanied a caravan across the Sahara desert, reaching the coast at Tangier. After hearing and examining his statements, the Soc. awarded to him the offered prize, with a pension of 1,000 francs, and the order of the Legion of Honor. His notes of travel, arranged by M. Jomard, were published under the title of *Journal d'un Voyage à Tembouktou et à Jenné dans l'Afrique Centrale*, etc. (3 vols., Par. 1830). In England, doubts were raised as to the veracity of C., but without grounds. C. died at his estate, in the neighborhood of Paris.

CAIMAN, or CAYMAN, n. *kā'măn* [name given by natives of Guiana]: the alligator or American crocodile.

CAIN, *kān*: first-born son of Adam and Eve. His history, in the book of Genesis, is mysterious, and the traditions which later superstition has gathered round it, have thrown no light on its perplexity. As the first murderer, his memory has always been profoundly execrated by the Christian Church; yet such is the perversity of human nature, that one sect—if not more—of the pseudo-Gnostics found his actions and character so much to their liking, that they called themselves *Cainites* (A.D. 130), and invented an explanation of his alleged crime, which, like most of the Gnostic heresies in the early church, sprang out of the deep-rooted fundamental error of the 'two principles.' The Cainites believed that C. was the offspring of the intercourse of a superior Power with Eve, and Abel of an inferior Power; that their characters corresponded to their paternal parentage, and that the slaying of Abel only symbolized the victory of the superior over the inferior Power. The subsequent punishments of C. were regarded as the persecutions of Abel's father—i.e., the Jewish God. For the same reason, they highly honored all the reprobates

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of the Old Testament—such as the people of Sodom, Esau, Korah, Dathan, and Abiram—whom they looked upon as the victims of the hatred of Jehovah. There are only distorted and fragmentary accounts of this, as of the other early heretical sects. The Cainites are also said to have denied the dogma of the resurrection of the body, to have rejected the New Testament, and accepted a gospel of Judas, the betrayer, whom also they revered for the singular reason that his crime, by procuring the death of Christ, secured the salvation of men.

CAIN-COLORED, a. *kān'kūl-ěrd* [*cane*, a strong reed: OE. *cane*, a kind of weasel: Gael. *cain*, of a yellow approaching to white]: in OE., of a sickly yellow or straw-color; light-colored; red. *Note*.—Both the origin and sense of this term in *Shakespeare* are much disputed.

CAINE, THOMAS HENRY HALL: English novelist: 1853, May 14—————; b. Runcorn, Cheshire, Eng. He was of Manx descent through his father. He was trained as an architect, but early turned to journalism and literature. His earliest publications were *Recollections of Rossetti* (1882), *Sonnets of Three Centuries* (1882), and *Cobwebs of Criticism* (1883). But his fame rests upon his novels. These are *The Shadow of a Crime* (1885), *The Son of Hagar* (1887), *The Deemster* (1887), *The Bondman* (1890), *The Scapegoat* (1891), *The Prophet* (1892), *The Manxman* (1894), *The Christian* (1896). Mr. Caine was sent to Canada in 1895 by the Society of British Authors in the interest of international copyright.

CAINOZOIC, a. *kā'nō-zō'ik* [Gr. *kainos*, recent; *zoë*, life]: in *geol.*, applied to the upper stratified systems holding forms of life identical with, or similar to, those still living; tertiary.

CAÏQUE, n. *kā-ēk'* [F. and Sp.: Turk *qaiq*, a boat]: a small Spanish warship; on the Bosphorus, a light skiff.

ÇA IRA, *sā ē-rā* (French for 'It will go on!'): refrain of the song beginning with—

‘Ah, ça ira, ça ira, ça ira!
Les aristocrates à la lanterne!’

remembered as associated with the most terrible scenes of the French Revolution. Like the *Marseillaise*, the *Car-magnole*, and the *Chant du Départ*, it became a French national song, and was styled the *Carillon National*. The melody, taken from another song, is said to have been a favorite air with the ill-fated Marie Antoinette.

CAIRD, EDWARD, D.C.L.: 1835—————; b. at Greenock, Scot.: author and teacher. He was educated at the Univ. of Glasgow; subsequently studied at Balliol Coll., Oxford; and became in 1864 fellow and tutor at Merton. In 1866, he became prof. of moral philosophy at Glasgow Univ.; and in 1893, master of Balliol, succeeding the famous Jowett. Among his works are a *Critical Account of the Philosophy of Kant* (1877); a brief book on *Hegel*, in Blackwood's 'Philosophical Classics'; *The Social Philosophy and Religion of Comte* (1885); and *Evolution of Religion* (1893).

CAIRN.

CAIRN, n. *käirn*, or CARN, *kârn* [Gael. and W. *carn*, a heap]: a heap of stones of conical form, frequently over an ancient place of sepulture; an artificial pile of stones. In its celtic sense of heap or pile, it appears in the names of hills and other natural objects in Scotland, Ireland, Wales, Cornwall, and Brittany. It is applied also to artificial heaps of unhewn stones.

There are several kinds of cairns. The simplest and most common form is a conical pile of stones of no great size. Next is what may be called the fenced or ringed C. —a heap of stones girdled round by large unhewn stones set upright in the ground. Some cairns have two, and a very few have three such concentric girdles; in some instances, there are concentric rows of upright stones within the cairn. Many cairns are found in the neighborhood of the circles of unhewn stone pillars which antiquaries used to style 'Druidical.' In a few instances, cairns are found at the end of an avenue of standing stones. Some cairns are fenced round by a narrow ditch and a small earthen rampart. A very few cairns have unhewn flat stones on their tops; a still smaller number are surmounted by an unhewn stone pillar. A few are oblong in shape.

Cairns were erected for several purposes. It appears from record that they were often raised to distinguish the marches or boundaries of lands. One C. near Balmoral, on the Highland Dee, is said to have been erected as a mustering-place for the men of Strathdee, who took its name, *Cuirn-na-cuimhne*, or 'C. of Remembrance,' for their slogan or war-cry. In later times, places where great crimes had been committed were marked by cairns; thus, 'Mushet's C.,' in the Queen's Park at Edinburgh, shows the spot where a wife was murdered by her husband, under circumstances of peculiar atrocity, 1720. But that the great purpose of the C. was sepulchral, is shown by the human remains found in so many of them. '*Disjectis et erutis, ossa inveniuntur, et quibusdam honor nominis adhuc manet,*' says Robert Gordon of Straloch, writing of Scotch cairns in 1654. 'For the cairns or heaps of stones in several parts of Ireland,' wrote Thady O'Roddy 1617, 'some of them were heaped as monuments of battles, some made in memory of some eminent persons buried in such a place.' A Highland suppliant would have said to his benefactor: *Curri mi cloch er do charne*, 'I will add a stone to your cairn.' The bones found in cairns are generally calcined or half-burned, and inclosed either in what are called *cists* —small rude collins or unhewn stones—or in urns of earthenware, which, again, are in many cases protected by stone cists. With the bones are often found flint arrow-heads, flint ax-heads, stone hammers, stone rings, glass beads, implements of bone, bones of horses and oxen, spear-heads, and other weapons of bronze. In some instances, human bones are found unburned, inclosed in stone cists about 3 ft. long, or, more rarely, of the full size of a man. In one case, as many as 17 stone cists were found in one cairn.

Many cairns are of considerable size. Each of three

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cairns at Memsie, near Fraserburgh, Aberdeenshire, was about 300 ft. in circumference, and about 40 ft. high. A C. in the parish of Minnigaff, in Galloway, was 891 ft. in circumference. Several of the larger cairns are what is called 'chambered'—that is, have internal galleries or cells. Of three large ringed cairns at Clava, on the banks of the Nairn river, near the battlefield of Culloden, one was found to contain a gallery, about 2 ft. wide, leading from the s. side of the C. to a circular chamber in the centre, about 15 ft. in diameter, built of unhewn and uncemented stones, each course overlapping the other so as to meet at the top in that sort of rude dome which has received the name of the 'beehive house' (q.v.). The Boss C., on the moor of Dranadow, in the parish of Minnigaff, had two galleries crossing each other—each 80 ft. long, 4 ft. wide, and 3 ft. high.

Of all the 'chambered' cairns, the most remarkable is that at New Grange, on the banks of the Boyne, near Drogheda, Ireland. It is 400 paces in circumference, about 80 ft. high, and is supposed to contain 180,000 tons of stones. In 1699, it was described by Edward Lhwyd, Welsh antiquary, as, 'a mount or barrow, of very considerable height, encompassed with vast stones, pitched on end, round the bottom of it, and having another, lesser, standing on the top.' This last pillar has disappeared; of the outer ring of pillars, 10 still remain, placed at about 10 yards one from another. 'The cairn,' says Mr. Wake-man in his *Archæologia Hibernica* (Dublin, 1848), 'in its present ruinous condition, presents the appearance of a grassy hill partially wooded; but, upon examination, the coating of earth is found to be altogether superficial, and in several places the stones, of which the hill is entirely composed, are laid bare. The opening [nearly square, and lined by large flags] was accidentally discovered about 1699. The gallery, of which it is the external entrance, communicates with a [dome-roofed] chamber or cave nearly in the centre of the mound. This gallery, in length about 50 ft., is, at its entrance, 4 ft. high; in breadth about 3 ft. Toward the interior, its size gradually increases; and its height, where it forms the chamber, is 18 ft. The chamber is cruciform, the head and arms of the cross being formed by three recesses—each containing a basin of granite. The sides of these recesses are composed of immense blocks of stone, several of which bear a great variety of carving, supposed by some to be symbolical. The majority of these carvings must have been executed before the stones had been placed in their present positions. The length of the passage and chamber from n. to s. is 75 ft., and the breadth of the chamber from e. to w. 20 ft. Of the urns or basins in the recesses, that to the e. is the most remarkable. It is formed of a block of granite, and appears to have been set upon, or rather within, another of somewhat larger dimensions.' The Irish antiquaries believe that the chambered C. of New Grange—'the Cave of Achadín Aldai,' as it was called, from Aldai, the ancestor of the Tuatha De Danaan kings—was

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opened and rifled by the Norsemen 862. About a mile from it, on either side, are other two cairns of nearly equal size, named Knowth and Dowth. The latter was opened 1847, and found to contain a gallery, a cruciform chamber, a basin or sarcophagus, and carved stones, all of the same type as those of New Grange. Engravings of the sculptures, in both cairns, are given in Mr. W. R. Wilde's *Boyne and Blackwater*, pp. 192-207 (Dublin, 1850), and some of them are obviously of the same character with sculptures found in Scandinavia; at Locmariaker, and at Gavv Innis, in the Morbihan, in Brittany; in one of the cells of a tumulus opened 1853 at Pickaquoy, near Kirkwall, in Orkney; among the ruins of an ancient fort at the Laws, near Dundee; at the ancient forts at Rowtin Lynn, and Old Bewick, in Northumberland; and on one of the standing stones near Penrith in Cumberland, called 'Long Meg and her Daughters.'

Cairns are most frequent in stony countries. Where, as in many parts of England, stones are scarce, the barrow or earthen mound came in place of the C., from which it differs only in the materials of which it is made. So also in Scandinavia. Cairns, or *dysser*, as they are there called, are rare in Denmark, but more common in Sweden and Norway.

CAIRNES, *körn*z, JOHN ELLIOTT, LL.D.: 1824-75, July 8, b. Drogheda, Ireland: political economist. After some years in his father's counting-house, he entered Trinity College, Dublin; graduated 1848; was called to the Irish bar, and wrote for the press on social and economic questions. In 1856 he accepted the Dublin chair of political economy founded by his friend Abp. Whately; his first course of lectures was pub. 1857. In 1861 he passed to a similar position in Queen's College, Galway, and in 1866 to University College, London. His health became impaired 1865, and he withdrew from active duties 1872. He wrote much on gold for *Fraser's Magazine* and other periodicals, and published *The Slave Power* (1862); *Political Essays* (1873); *Essays in Political Economy* (1873); and *Some Leading Principles of Political Economy* (1874), his largest work. His writings are held to constitute the most important English contribution to economic science since J. S. Mill's *Principles*.

CAIRNGORM, n. *körn'gawrm*: a brownish-yellow or amber-colored variety of quartz or rock-crystal, found at *Cairngorm*, Aberdeenshire, Scotland, and in other places, as at Olivet near Orleans, in Brazil, and in Siberia. In Cairngorm and the neighboring district of Mar, it occurs both in the granite rock and in the alluvial soil. It differs from common colorless quartz or rock-crystal only in the presence of a very little oxide of iron or manganese, to which it owes its color. It is much used as an ornamental stone. The yellow variety is frequently called topaz, though quite different from the true topaz, which it resembles chiefly in color, having neither its hardness nor its brilliancy. The topaz is, however, something found

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with it in the granite and gneiss districts of Mar and Cairngorm. The brown variety is sometimes called SMOKY QUARTZ, and when of a good and uniform color is by some preferred to the yellow.

CAIRO, *kār'ō*: town of Illinois, at the junction of the Ohio and Mississippi, the s. extremity of the state; cap. of Alexander co. It is the terminus of the Illinois Central railroad, which owned much of the land, and expended large sums, expecting the place to become a great centre of commerce. The ground being low, levees were erected and an embankment 80 ft. wide and 10 ft. high begun in 1857: in 1858 a flood nearly destroyed the town, but it was rebuilt and sufficiently protected. During the war it had importance as a depot of supplies and base of military and naval operations. Several thousand steamboats land there during the year; but its great advantages as a natural business centre are marred by an unhealthy climate. It has some manufactures, a custom-house of cut-stone which cost about \$200,000, two banks, and several newspapers. Pop. (1900) 12,566.

CAIRO, *kī'rō* (Arabic, *Musr el Kahirah*, 'the victorious capital'): capital of modern Egypt; lat. 30° 2' n., long. 31° 16' e.; in a sandy plain between the right bank of the Nile and the ridge of Mokattam, and near the point of the delta of the Nile. From the foundation of the city, A.D. 969, the Fatimite caliphs of Africa, who brought the bones of their ancestors with them from Kairon, reigned for ten generations over the land of Egypt. The caliph Hakem, who built a mosque near Bab-el-Nassr, supposed founder of the Druse religion, was the third in this succession. In 1171, Saladin usurped the throne from the last of the Fatimites. His descendant, Moosa-el-Ashref, was deposed 1250; from that time till 1517, when the city was stormed and taken by Sultan Selim, C. was governed by a succession of Mameluke kings. C. was occupied by British troops 1882.

The city of C. occupies about three sq. m., and is surrounded by a low wall. Of late years it has been greatly improved. It is lighted with gas, and many fine broad streets have been opened through the crowded districts. The bazaars are well and richly supplied. The houses, which are generally two or three stories high, are built of variegated brick, with interlinings of wood, and have flat roofs. The city is divided into different quarters, one quarter being appropriated to the Turks, one to the Christians, one to the Jews, etc.; so that every religious sect has its own quarter, separated from the adjoining one by strong gates at the end of the streets; these are closed at night, and guarded by a porter, who opens the gate when any one wants to pass.

The most remarkable buildings in the city of C. are its minarets and mosques. The minarets are the most beautiful of any in the Levant, of a prodigious height, and built of alternate layers of red and white stone. The most ancient of all the minarets is that attached to the great

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mosque of Sultan Tayloón. This mosque was built in the year of the Hegira 265 (A.D. 879), before the foundation of the city, and consists of an immense cloister or arcade on pointed arches, being the earliest extant in that form. Another magnificent mosque is that of the Sultan Hassan, in the place of the Roumayli, near the citadel; finished about 1362. It has two very elegant and high minarets, and the mosque, in consequence of its size, and the thickness of its walls, was frequently seized and made use of as a fortress by the insurgents in the numerous rebellions and insurrections under the rule of the Mameluke kings.

The population of C. consists of the ruling class, mostly Turks; Arabs, the former conquerors of the land, who form the bulk of the population, all the petty tradesmen and cultivators of the soil being of Arab origin; Copts, descended from the original lords of the land, the ancient Egyptians; Jews, Armenians, Syrians, Africans and Europeans. C. was occupied for a time by an English force after the battle of Tel-el-Kebir 1882; and suffered severely from cholera 1883. The Copts, a mere fraction of the population, built a handsome church 1867. Since 1863, the part of C. occupied by Europeans has been rebuilt in European style, with small regard for historical interest or harmony with surroundings.

Of objects worthy of note in the environs of C., are the tombs of the caliphs, about a mile beyond the walls—magnificent and imposing buildings, beautiful specimens of Arabian architecture. The mausoleum of Sultan Bergook is a gem of Saracenic architecture. The public gardens, which consist of groves of oranges, citron, palms, and vines, are very beautiful. The trade of C. is rapidly increasing. Exports consist mainly of native products, such as ivory, gum, wood, hides, ostrich feathers, cotton, and sugar; while imports are cotton and woolen goods, prints, hardware, cloth, furniture, shawls, indigo, sheep, tobacco, etc. The manufactures of C. embrace silk and cotton fabrics, gunpowder, glass lamps, sugar, sal ammoniac, weapons, and iron ware. C. is a great seat of learning, and popular education has recently advanced. The government college and the national schools are largely attended, while several thousand pupils attend the Moslem theological univ. attached to the mosque of Ezher. The schools comprise a commercial and juridical school at the Darb Algamâmîz, a school of arts and industry at Boolak (q.v.), and military schools at the Abbasseeyah. The language spoken at C. is Arabic. C. is the official residence of the khedive of Egypt, and has railway connection with Alexandria and Suez, and with Upper Egypt. Pop. (1897) 570,062.

CAISSE, n. *kās* [F. (see CAISSON)]: a case; a box; cash-box; money-chest: in *anat.*, the drum of the ear.

CAISSON, n. *kās'sōn* or *kās-sūn'* [F. *caisson*—from *caisse*, a case, a chest—from Prov. *caissa*—from L. *capsa*, a chest or box]: in *military* matters, a wooden box filled with military stores; an ammunition-wagon; a large wooden chest

CAITHNESS.

or frame loaded with powder, shells, etc., and buried under a fortification, to be blown up if the enemy take possession.

C., in relation to shipping, is an apparatus for lifting a vessel out of the water for repairs or inspection; usually a hollow structure, sunk by letting water into it. There is an air-chamber inside, which allows it to sink only to a certain depth. In that state it is hauled under the ship's bottom, the traps or openings are closed, the water is pumped out, and the caisson rises with the ship upon it.

C. in engineering, is the water-tight box or casing used to permit of founding and building the piers of a bridge, quays, or other structures under water, when the water is too deep for a coffer-dam (q.v.). The caisson is frequently of cylindrical shape, open at bottom, those who work in it being supplied with air in the same way as divers in a diving-bell. The largest yet used was for the New York tower of the Brooklyn bridge, 172 ft. long, 102 ft. wide, 82 ft. high; of timber with lining of boiler-iron. After being sunk 78 ft. below main tide, the whole interior was filled with concrete.

CAITHNESS, *kāth'ness*: northernmost county on the mainland of Scotland; length from n. to s., 40 m.; greatest breadth, 30 m.; 712 sq. m. Except in the w. and s., where the mountain-range dividing C. from Sutherland attains a height of more than 2,300 ft., the general aspect of C. is level and bare, being in great part moorland and destitute of trees, while the sea-coast is bold and rocky, with many bays, inlets, promontories, and caves. On the n. coast are Dunnet Head and Duncansby Head; and on the w. side of the last-named head is a spot of green turf, called John o' Groat's House, where John de Groot or Groat of Warse settled with his brothers in James IV.'s time, and built a house. There are no navigable rivers in C., and no lakes of importance. The climate is damp and chilly, but snow rarely lies on the plains above a day or two at a time. Thunder is rare, but auroræ are seen almost nightly. There are no manufactures, properly so called, though weaving is carried on to some extent. Coal has not been found in C.; the common fuel is peat. The chief crops are oats, barley, turnips, and potatoes. The parts of the surface under tillage are generally a deep fertile loam on a strong till clay. In the n.e., the soil is sandy. The crops are 20 days later in ripening than in the Lothians. The occupants of many of the small farms divide their time between farming and fishing. There are herring, ling, cod, salmon, and lobster fisheries. The herring-fishery in July and August employs about 1,500 boats, some of which come from other parts of the Scotch coasts. Wick is the chief seat of the British herring-fishery. The average number of barrels cured annually in the ports of C. is abt. 200,000. Other exports are cattle, oats, and wool; also flag-stones, of which, as well as of freestone and slate, C. contains quarries. Wick is the only parliamentary borough in C.; another town is Thurso, an old burgh of barony. Of the total acreage, 455,708 acres, some 35,000 are in corn, 17,000 in green crops, and 32,000 in grass. The county returns one member to parlia-

CAITHNESS FLAGSTONES—CAJEPUT.

ment, and Wick unites with Kirkwall, Dornock, Dingwall, Tain, and Cromarty, in returning another. A railway, completed 1874, and extending to Wick and Thurso, connects C. with the s. In early times, C. is supposed to have been inhabited by Celts; these afterward mixed with Danes and Norwegians. C., in the middle ages, was subject to the kings of Norway. David II. adopted the weights and measures of C. for all Scotland. The Scandinavian origin or mixture of the people of C. is shown by their tall forms and soft, fair features, and their speaking English instead of Gaelic. C. has remains of Picts' houses, round towers, etc. Pop. (1901) 33,870.

CAITHNESS FLAGSTONES: dark-colored bituminous schists, slightly micaceous and calcareous, valuable on account of their great toughness and durability for pavements, cisterns, and various other purposes, and accordingly largely exported. They belong to the Old Red Sandstone, and contain abundant remains of fossil fishes.

CAITIFF, a. *kā'tif* [F. *chétif*, poor, wretched—from OF. *chaitif* and *caitif*—from L. *captivus*, a captive: in *mid. L.*, mean, poor-looking]: base; vile; wicked and mean: N. a mean, despicable person.

CAIUS, *kā'yūs*, JOHN, M.D.: 1510–1573, July; b. Norwich, England: from whom Caius College, Cambridge, takes its name. His real name was Kaye or Key, which he Latinized into Caius. He was educated at Gonville Hall, Univ. of Cambridge; and at the age of 20, turned into English Chrysostom's *Method of Praying to God*, followed by a translation of Erasmus *On True Theology*. He next went abroad, and resided in Italy several years, studying medicine. On his return to England, he practiced with success at Cambridge, Shrewsbury, and Norwich. Henry VIII. appointed him anatomical lecturer to the Company of Surgeons in London. In 1547, he was elected a fellow of the College of Physicians, of which he was subsequently made president. He also became physician to Edward VI., Queen Mary, and Queen Elizabeth. In 1557, he obtained permission to elevate Gonville Hall into a college, which took the name of Caius College, and of which he became master, holding the office till his death. His principal work is, *A Booke or Counseill against the Disease commonly called the Sweate or Sweatyng Sicknesse*. Anno Do. 1552. C., however, wrote a great number of works on a variety of subjects, critical, antiquarian, and scientific.

CAIUS COLLEGE: see GONVILLE AND CAIUS COLLEGE.

CAIVANO, *kī-van'no*: town of s. Italy, province of Naples, 8 miles n. of the city of Naples. It was a place of considerable strength in the middle ages, and retains many remains of its walls and towers, though they have suffered severely in the various revolutions of Naples. Pop. 10,000.

CAJAMAR'CA: see CAXAMARCA.

CAJATAM'BO: see CAXATAMBO.

CAJEPUT: see CAJUPUT.

CAJETAN—CALABAR.

CAJETAN, or GAETANI, BENEDETTO: see BONIFACE VIII.

CAJETAN, *káj'e-tan* or *ká'ye-tăn*, TOMMASO DE VIO: 1469, Feb. 20—1534, Aug. 9; named from his native town, Cajeta or Gaeta, Italy. He entered the Dominican order at 16; in 1508 became its general; defended Pope Julius II. at Pisa and Milan, and claimed for the pope exclusively the power of summoning councils; was made a cardinal 1517, and sent by Leo X. as legate to Germany, to induce the emperor Maximilian to join the league against the Turks, and to oppose the progress of the new doctrine. In this embassy his haughty manners still further estranged the reformers, and his demand that Luther should retract was not complied with. In 1519 he contributed to the election of Charles V. He became bp. of Gaeta and abp. of Palermo, was legate to Hungary when invaded by the Turks in 1523, and made prisoner and held to a ransom of 5,000 crowns when Rome was taken by the Imperialists in 1527. He died at Rome: his works were collected at Lyons, 1639.

CAJOLE, v. *kǎ-jól'* [F. *cajoler*, to flatter—from OF. *cageoler*, to sing like a caged bird, or like a jay in a cage (see CAGE)]: to seduce by flattering words; to deceive by flattery; to coax. CAJO'LING, imp. CAJOLED', pp. *jöld'*. CAJO'LER, n. one who. CAJO'LERY, n. *-lér-ĩ*, a coaxing; flattery.—SYN. of 'cajole': to coax; wheedle; flatter; deceive; delude; soothe; entrap.

CAJUPUT, n. *kǎ-yô-pút*, or CAJEPUT, *kǎj'ě-pút* [Mal. *kayu-puti*, white wood], (*Melaleuca Cajeputi* or *M. minor*): tree of the nat. ord. *Myrtaceæ*, sub-order *Leptospermeæ*, from the leaves of which the pungent, aromatic, volatile oil, called *Oil of Cajuput*, is obtained by distillation. The C. tree is common on the mountains of the Moluccas. It is small, with a crooked trunk, thick spongy bark, white wood, elliptical-lanceolate alternate leaves, and terminal spikes of white flowers. The greater number of the species are natives of Australia, some of them very beautiful shrubs, ornaments of hot-houses. Much of the oil of C. of commerce is prepared in the island of Banda. It is said that two sackfuls of leaves yield scarcely three drachms of the oil, which is green, transparent, limpid, with a strong penetrating odor, agreeable only when much diffused.

CAKE, n. *kāk* [Sw. *kaka*, a cake or loaf: Dan. *kage*: Dut. *koeck*: Ger. *kuchen*]: a mass of dough baked of various shapes; thin flat pieces of oatmeal dough baked; a flattish mass of anything adhering or sticking together: V. to form into a flattish mass; to harden into a lump. CA'KING, imp. CAKED, pp. *kākt*, converted into a cake or crust. CAKING-COAL, the kinds of coal which cake or run together in the fire. MY CAKE IS DOUGH, I have been unsuccessful in my baking or undertaking; a failure. *Note*.—Skeat connects *cake* with L. *coq'uēre*, to cook.

CALABAR, *kāl-a-bār'*: a coast district of Upper Guinea, Africa, the limits of which are not clearly defined; but usually understood to extend between the river Benin and New Calabar, called by the Portuguese Rio del Rey, and

CALABAR—CALABAR BEAN.

as far n. as the Kong Mountains. The surface is low and flat, and the climate unhealthful. Yams, the principal food of the inhabitants, are raised in plenty, also the sugar-cane, and palms, from which palm-oil is obtained in large quantities. The inhabitants are polygamists, and make human sacrifices to good and evil spirits. The United Presbyterians have had a mission here since 1846, which is beginning to produce beneficial changes.

CALABAR, NEW: river, a branch of the Niger, falling into the Bight of Biafra, lat $4^{\circ} 30'$ n., long $7^{\circ} 7'$ e. It has a bar across its mouth, which prevents the entrance of vessels drawing more than 12 ft.; but some miles up it has an average depth of 30 ft.

CALABAR, OLD: river of the dist. of Calabar, enters the Bight of Biafra, about 52 m. w.n.w. of Fernando Po., by an estuary about 9 m. wide. It is navigable by steamers for about 200 m. above its mouth, and abounds in crocodiles. The chief towns on its banks are—Duke Town, situated on its estuary; Creek Town, further up, both seats of British missions; Acoono Coono, and Omun.

CALABAR BEAN: remarkable medicinal agent, introduced into the new edition of the British Pharmacopœia (1867). It is the seed of *Physostigma venenosum*, a twining, half-shrubby plant, native of w. Africa, of the nat. ord. *Leguminosæ*, sub-order *Papilionaceæ*, nearly allied to the kidney bean, but of a genus distinguished by the hood-shaped stigma, and the deeply-furrowed hilum of the seed. The following are the leading characters of the bean itself: 'About the size of a very large horse-bean, with a very firm, hard, brittle, shining integument, of a brownish-red, pale chocolate, or ash-gray color. Irregularly kidney-shaped, with two flat sides, and a furrow running longitudinally along its convex margin, ending in an aperture near one end of the seed. Within the shell is a kernel, consisting of two cotyledons, weighing on an average about 46 grains, hard, white, and pulverizable, of a taste like that of the ordinary edible leguminous seeds, without bitterness, acrimony, or aromatic flavor. It yields its virtues to alcohol, and imperfectly to water.' It is used in the form of an emulsion by the natives of Africa, as an ordeal when persons are suspected of witchcraft. About 20 years ago, Dr. Christison very nearly fell a victim to his zeal for science in experimenting on some specimens of this bean which had been sent to Edinburgh by some African missionaries, dangerous symptoms having been produced by 12 grains of the kernel which he swallowed. In 1861, Dr. Thomas R. Fraser tried the effects upon himself of doses of 6, 8, and 10 grains. The general symptoms were epigastric uneasiness, great feebleness, dimness of vision, salivation, giddiness, and irregular, feeble, and slow heart's action. About the same time, he made the interesting discovery, that when placed on the eyeball this substance contracts the pupil, and produces near-sightedness; and it is now frequently employed for these purposes by ophthalmic surgeons. In 1864, 50 children were poisoned by eating these beans, which were swept out

CALABASH.

of a ship at Liverpool, A boy aged six years, who ate six beans, died very soon. The chief symptoms in these cases were griping, vomiting, and contracted pupils; the face was pale, the eyes bright and protruding, and in trying to walk, the children staggered as if they were drunk. Dr. Fraser, in a paper which he communicated to the Royal Soc. of Edinburgh, 1866, maintains that, in mammals, death is generally produced by a combination of syncope (faintness) with asphyxia (suffocation); the symptoms of the one or the other depending on the dose, which, when large, at once destroys the heart's action. It has been used medicinally in small doses (one to ten grains of the powder, or $\frac{1}{16}$ to $\frac{1}{8}$ of a grain of the extract) in chorea, tetanus, general paralysis of the insane, and other diseases of the nervous system. Being now a recognized medicinal agent, it is satisfactory to know that the dangerous and even fatal effects of excessive doses may be prevented by administering belladonna (nightshade), or its active principle, atropia, as a counter-poison. This fact has been established by Dr. Fraser in a communication to the Royal Soc. of Edinburgh, embracing the results of 500 experiments on dogs and rabbits. So unmistakable is the power of the antidote, that it can prevent even three times a fatal dose of the kernel from causing death in those animals. Belladonna has also an opposite action on the eye to that of this substance, as it dilates the pupils and produces long-sightedness. When the pupil is contracted by Calabar bean, it may be dilated to its normal, or to a greater, size by belladonna; and when it is dilated by belladonna, it may be reduced to its normal, or to a less, size by Calabar bean.

CALABASH, n. *kāl'ā-bāsh* [F. *calebasse*—from Sp. *cala-*

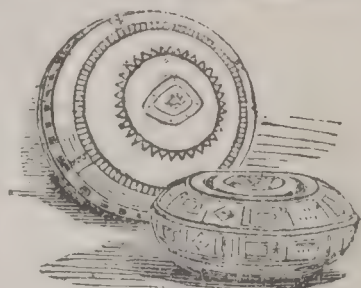


Calabash Tree.

baza—from Ar. *garah*, a kind of gourd; *aibas*, dry]: a vessel or cup made of the shell of a gourd; a large fruit shaped

CALABA TREE—CALABRIA.

like a pear. **CALABASH-TREE** (*Crescentia Cujete*), tree of the West Indies and the tropical parts of America, of the nat. ord. *Bignoniaceæ* (q.v.), suborder *Crescentiaceæ*. In height and size it resembles an apple-tree, and has wedge-shaped leaves, large whitish fleshy flowers scattered over the trunk and older branches, and a gourd-like fruit, sometimes a foot in diameter. The wood of the tree is tough and flexible, and well adapted for coach-making. But the most useful part is the hard shell of the fruit, which, under the name of *calabash*, is much used in place of bottles for holding liquids, and for goblets, cups, water-cans, etc. These shells may even be used as kettles for boiling liquids, and they will bear this several times without being destroyed. They are sometimes highly polished, carved with figures, tinged with various colors, and converted into ornamental vessels. The rinds of gourds are sometimes similarly used, and called calabashes.



Carved Calabashes.

CAL'ABA TREE: see **CALOPHYLLUM**.

CALABOZO, *ká-lá-bō'sō*: inland town of Venezuela, on the left bank of the river Guarico, 120 m. s.s.w. of Caracas; lat. 8° 55' n., long. 67° 42' w.; founded early in the 18th c. by a company. Bolivar defeated the Spanish Gen. Morales here, 1820. C. is well built, has several fine churches, a college, 4 schools, but suffers from frequent floods and an average temperature of 88°. It is the centre of a cattle-raising country; there are hot springs near, and pools abounding in electrical eels. Pop. (1873) 5,618; (1893) 6,000.

CALABRIA, *ka-lā'brī-ā*: s. w. peninsula of the kingdom of Italy, bounded n. by the province of Basilicata. Its greatest length, from the s. border of Basilicata to Cape Spartivento, is about 160 m. In its n. part it has a breadth in some places of more than 60 m., which suddenly contracts, between the Gulfs of Sant' Eufemia and Squillace, to not more than 16 m.; area nearly 7,000 sq. m. It is traversed through its entire length by the Apennine Mountains (q.v.), whose summits in the region in the n. of C., known as La Sila, and the Aspromonte, in the s., are crowned with pines, while forests of oak and beech cover their sides. The valleys between the various hills afford rich pasture, especially in the n., to which, in spring-time, whole colonies migrate with their flocks and herds. There is no river of any importance in C.; but the valleys and plains, watered by small streams are very fertile, yielding wheat, rice, cotton, licorice, saffron, the sugar-cane, etc.; also the vine, orange, lemon, olive, fig, and mulberry, in luxuriance. Iron, alabaster, marble, gypsum, and antimony, are among its minerals. The fisheries of its coasts, particularly the tunny and anchovy fisheries, are important, and afford employment to a large number of the population. Manufactures are in a backward state. Silk is the staple article. The district is very subject to earthquakes.

CALADIUM—CALAIS.

In ancient times the name C. was given to the s.e. peninsula, nearly corresponding to the modern province of Lecce, no portion of which is included in modern C., which answers to the ancient *Bruttium*. The name C., as applied to the district now known by that name, appears to have originated with the Byzantines some time prior to the conquest of the country by the Normans. A colony of the Vaudois or Waldenses of Piedmont was founded in C. 1340, and for some time enjoyed great prosperity, but was extirpated 1560-1. The destruction of this colony is one of the blackest passages of the history of religion in Italy.

The Calabrians are a proud, fiery, and revengeful race. They were long celebrated as among the fiercest of banditti; but the crimes which in former times made them infamous are no longer frequent. They strenuously resisted the power of France during the Napoleonic campaigns, and were not finally subdued until 1810. For purposes of administration, C. is divided into the provinces of Cosenza, pop. 465,267—cap. Cosenza; Catanzaro, pop. 476,227—cap. Catanzaro; and Reggio, pop. 428,714—cap. Reggio. Total pop. of C. (1901) 1,370,208.

CALADIUM, n. *kā-lā-dī-ūm* [perhaps Gr. *kalos*, beautiful: comp. Sp. *calado*, open work; *calados*, lace]: a genus of plants, ord. *Aracēæ*, having a hood-like spathe rolled round at the base—varieties of several species have singularly spotted stems, and beautifully variegated foliage: see Cocco.

CALAHORRA, *kā-lā-ōr'rá*: town of Spain, province of Logroño, 24 m. s.e. of the city of Logroño; on the small river Cidacos, about 2 m. from its confluence with the Ebro. C. occupies the site of the ancient *Calagurris*, celebrated in classic history for the obstinate but unsuccessful resistance it offered (B.C. 78) to Afranius, Pompey's legate, when the citizens slaughtered their wives and children for food rather than surrender. C. was the birthplace of Quintilian the rhetorician. It has an old cathedral, and a trade in the agricultural produce of the rich district in which it is situated. Pop. about 8,000.

CALAIS, *kāl'is*: a city and port of Washington co., Me., at the head of navigation on the St. Croix river; 28 m. n. by w. of Eastport, 75 m. e. by n. of Bangor, and 264 m. n.e. of Portland; the s.e. terminus of the St. Croix and Penobscot R.R.; is connected with St. Stephens, prov. of N. B., by 15 bridges. It was incorporated 1850, and in 1870, Aug., the most valuable section, with 15 wharves and 20 vessels was destroyed by fire. It has long been noted for its lumber and ship-building industries: for the first of which it has over 60 mills and 40 lath and shingle machines, with a productive capacity of 1,000,000 superficial feet of sawed lumber per day, and for the latter 10 ship-yards, an ample dry dock and two marine railways. C. has a fine city hall, 16 schools, 10 churches, an academy, opera house, three machine shops, two foundries, four hotels, and two weekly newspapers. Pop. (1900) 7,665.

CALAIS—CALAMANCO.

CALAIS, *kā-lā'*: seaport town of France, dept. of Pas-de-Calais, on the Strait of Dover, near its narrowest part, the distance from the town of Dover not being more than 26 m. There is here a lighthouse 190 ft. high. In 1879, it was determined to encircle C. with vast new fortifications, and make it once more a fortress of the first class. On the s. and e., low marshy grounds, which the authorities have the means of submerging, stretch up almost to the walls. The town, adjacent country, and port are commanded by the citadel, at the west end of the town, while numerous forts, by their cross-fire, defend the weakest points. The harbor, which is nearly dry at low tide, and rarely has more than 15-18 ft. of water, is formed by two moles, which project about three-quarters of a mile into the sea. Being one of the chief ports of debarkation for travellers from England to France, it has daily steam communication with Dover—with which it is also connected by submarine telegraph—and with London and Ramsgate several times a week. The drawbridge and gate by which, till 1883, the city was entered from the sea, was erected 1685 by Cardinal Richelieu, but has now been taken down; and the old ramparts and fosses were obliterated, as being a hindrance to communication between C. and its thriving suburb, St. Pierre de Calais (larger than C. itself). C. has few objects of interest, the most noticeable being the cathedral, with a fine picture of the *Assumption* by Vandyck. The chief manufactures are bobbinet (tulle) and hosiery. Numerous mills have been built; steam-engines are multiplying; and the inner ramparts have been removed to make room for factories. Hats and gloves are extensively made. It has also distilleries, salt-refineries, and ship-building. C. sends many boats to fish for herring and cod on the coasts of Scotland and Iceland. Water, which used to be scarce, is now brought in abundance from the neighborhood of Guines. Its exports consist of eggs, corn, wine, brandy, etc. In 1873, a school of artillery was established in Calais.

In the 9th c. C. was but a small fishing-village. In the following c. it was much improved by Baldwin IV., Count of Flanders, and enlarged and strengthened by Philippe of France, Count of Boulogne. After a long siege it was captured by Edward III, of England, whose hard terms, and the self-devotion shown by six of the citizens, who were saved by Queen Philippa, form one of the most interesting passages of history. The English retained it till 1558, when it was captured by the Duke of Guise, since which time (with the exception of two years, 1596-98, when it was in the possession of the Spaniards) it has been in French possession. In 1659, Charles II. of England resided some time here; and about a quarter of a century later, James II. arrived here with French troops for the invasion of England, which the destruction of the French fleet prevented him from accomplishing. Louis XVIII. landed here in 1814, after his exile. Pop. (1901) 59,743.

CALAMANCO, n. *kāl a-mān'kō* [L. *calamancus*; mod. Gr. *kamelaukion*, a head-covering of camel's hair]: a kind of woolen stuff made in the Netherlands, which has a fine

CALAMANDER-WOOD—CALAMIANES.

gloss, and is checkered in the warp, so that the checks are seen on one side only.

CALAMANDER WOOD, n. *kāl-ă-măn'dēr* [corruption of *Coromandel*]: cabinet wood of the greatest value, resembling rosewood, but much surpassing it in beauty and durability. The tree which produces it is *Diospyros hirsuta* (see **DIOSPYROS**), a species of the same genus which produces ebony; it has oblong obtuse leaves, which are downy beneath, and flowers without stalks and crowded; and is a native of the s.e. of India, and of Ceylon, particularly of the forests at the base of Adam's Peak. But this tree 'has been so prodigally felled, first by the Dutch and afterward by the English, without any precautions for planting or production, that it has at last become exceedingly rare,' so that wood of considerable size is scarcely to be procured at any price. It yields veneers of unusual beauty, 'dark wavings and blotches, almost black, being gracefully disposed over a delicate fawn-colored ground. Its density is very great, a cubic foot weighing nearly 60 lbs., and it takes an exquisite polish.

CALAMARY, n. *kāl'ă-mā'rĭ* [mod. Gr. *kalamāri*, ink-stand: L. *calamāriūs*, pertaining to a writing reed—from *calāmus*, a reed-pen], known also as **SQUID**, or **SLEEVE-FISH** (*Loligo*): genus of cephalopodous mollusks of the order *Di-branchiata*, family *Teuthidæ*. The body is of elongated form, firm, fleshy, tapering, flanked toward its posterior extremity by two triangular fins. The body contains a *gladius*, or internal shell, which is horny and flexible, narrow and pen-shaped, with the shaft produced in front. The mouth is furnished with eight arms. Calamaries have the power of diffusing a dark-colored fluid around them in the water like the cuttle-fish. The different species are distributed over all parts of the world. In some seas, however, they so abound as to form the principal food of some of the larger fishes and of whales. The Common



Common Calamary (*Loligo Vulgaris*): a, gladius.

C. or Squid (*L. vulgaris*) is of a bluish color, speckled with purple. It grows to nearly a foot and a half in length, without reckoning the head and arms, which add to the length about half a foot more. See **CEPHALOPODA**.

CALAMIANES, *kā-lā-mĭ-ă'nēs*: group of islands in the Eastern archipelago, lat. about 11° 25'—12° 20' n., long.

CALAMINE—CALAMITE.

120° e. The largest of the group, named Calamianes, is about 35 m. long, and 15 m. broad, elevated and fertile, with abundance of animals, such as deer and hogs.

CALAMINE, n. *kāl'ă-mîn* [L. *calamina*, cor. of L. *cadmia*, an impure ore of zinc]: zinc silicate; but the name has been confounded with zinc carbonate, which is smithsonite, chemically distinguished by Smithson 1803, and named after him 1832. The two occur together, and have outward resemblance, but C. does not give the reaction for carbonic acid, except one 'carbonated' variety, found pisolitic in Spain. C. is usually white, sometimes bluish, greenish, yellowish, or brown, and occurs crystallized (orthorhombic), or in stalactitic, massive, or fibrous forms, and usually with zinc, lead, and iron sulphides; also to the amount sometimes of 40 per cent. of zinc oxide in clays, as in Mo. and Penn. It is an important ore of zinc. **CALAMITE**, n. *-mīt*, a soft asparagus-green variety of tremolite. **CALAMITES**, n. plu. in *geol.*, fossil stems occurring in the coal-measures—so called from their resemblance to gigantic reeds.

CALAMINT, n. *kāl'ă-mīnt* [Gr. *kalos*, beautiful, excellent; *mintha*, mint], (*Calamintha*): genus of plants of the nat. ord. *Labiata*, nearly allied to BALM (q.v.) (*Melissa*). The COMMON C. (*C. Officinalis*, formerly *Melissa Calamintha*) has whorls of flowers (*verticillasters*), on forked, many-flowered stalks, and serrated leaves, with the agreeable aromatic odor of some kinds of mint. It is used by the country people to make herb tea, and as a pectoral medicine.—The LESSER C. (*C. Nepeta*), is used in the same way. Anciently, great medicinal virtues were ascribed to these wild plants—'excellent mints.'

CALAMITE, *kāl'a-mīt* [see CALAMINE]: genus of fossil plants whose true position has not been ascertained. They appear first in the Devonian rocks, and rise through the intermediate formations to the Oolitic series, where they are represented by a single species. They reach their culminating point in the Coal-measures, where 39 species have been determined. The tall, straight stems rose from a swampy clay soil in profusion in the forests of sigillaria, and formed a striking and characteristic feature in the coal flora, though they supplied little material for the structure of coal. They are hollow-jointed cylinders, with longitudinal furrows, giving the fossil the appearance of *Equiseta*; from this resemblance, botanists have generally considered them as huge 'horsetails.' Hooker has



Fragment of
Calamite
(*C. Cannæ-
formis*).

been unable to detect any traces of structure, in carefully-prepared specimens, or the presence of those siliceous stomata which characterize *Equiseta*, and which would have been preserved in the fossil state, and Fleming has shown that the furrows are markings on the interior cavity. While, therefore, it is certain that they are not

CALAMITY—CALAMY.

'horsetails,' the absence of fructification makes every attempt to give them their position but guess-work. Hooker supposes them nearly allied to Ferns, or Club-Mosses; Brongniart ranks them among Gymnospermous Dicotyledons. The upper part of the stem, and the foliage, if any, have not been noticed. The root termination was conical, the joints decreasing downward in size and length. From the scars on the upper portion of each joint, there proceeded filaments, which were supposed to be leaves, but are really roots. These are shown in the species figured—a species common in the English coal-field.

CALAMITY, n. *kǎ-lǎm'ĩ-tĩ* [F. *calamité*—from L. *calamitatem*, adversity]: a great misfortune or cause of misery. **CALAMITOUS**, a. *-tūs*, producing distress and misery; full of misery. **CALAMITOUSLY**, ad. *-lĩ*. **CALAMITOUSNESS**, n.—**SYN.** of 'calamitous': deplorable; grievous; disastrous; adverse; sad; severe; miserable; distressful; wretched; baleful; unhappy;—of 'calamity': disaster; visitation; misfortune; mischance; mishap; misadventure; distress; affliction; adversity; unhappiness; misery, extremity; evil; downfall.

CALAMUS, n. *kǎl'ǎ-mūs* [L. *calāmus*, a reed, a cane]: the sweet-flag growing in ponds, by the banks of rivers, and wet places in England and other parts of Europe, in the East Indies and America, used to flavor liquids, etc.; the *Acōrus calāmus*, ord. *Arūcēæ*: see **ACORUS**: **CALAMUS AROMATICUS**.

CALAMUS, n. *kǎl'ǎ-mūs*: a rush; a reed anciently used as a pen to write with, or made into a musical instrument. The reeds, probably *Arundo Donax* (see **REED**), grew in marshy places. The best were obtained from Egypt. The stem was first softened, then dried, and cut and split with a knife (*scalprum librarium*) as quill pens are made. To this day the Orientals generally write with a reed, which the Arabs also call *Kalām*. In *bot.*, the name C. is applied to a hollow, inarticulate stem. **CALAMIFEROUS**, a. *-mifer-ūs* [L. *fero*, I bear]: in *bot.*, producing reeds; reedy.

CALAMUS, *kǎl'a-mūs*: genus of palms: see **RATTAN** and **DRAGON'S BLOOD**.

CALAMUS AROMATICUS, *kǎl'a-mūs ǎr-ō-mǎt'ĩ-kūs*: name given by the ancients to a plant to which they ascribed important medicinal virtues. It is not ascertained what the plant is: the most probable opinion appears to be that of Dr. Royle, who supposes it to be one of the sweet-scented grasses which yield the grass-oil (q.v.) of India, to which he has given the name of *Andropogon calamus aromaticus*. See **LEMON-GRASS**. The C. A. of the Greeks and Romans came from the East. The *Sweet Calamus* and *Sweet Cane* mentioned in Scripture (Exod. xxx. 23, and Jer. vi. 20) are probably the same with the *calamus aromaticus*.

CALAMY, *kǎl'ǎ-mĩ*, **EDMUND**: 1600–1666, Oct. 29; b. London; Presb. clergyman. He studied at Pembroke

CALANDO—CALAS.

Hall, Cambridge, where he attached himself to the Calvinistic party; and afterward became domestic chaplain to the Bp. of Ely. In 1626, he was appointed lecturer at Bury St. Edmunds, but resigned his office when the order to read the *Book of Sports* began to be enforced. In 1639, he was chosen minister of St. Mary's Aldermanbury, London. He now entered warmly into the controversies of the time, and became noted as a leading man on the side of the Presbyterians. He had a principal share in the composition of *Smectymnus*, a work intended as a reply to Bishop Hall's *Divine Right of Episcopacy*, and one of the most able and popular polemics of the day. Like most of the Presbyterian clergy, he was monarchical and not republican in his political opinions. He disapproved, therefore, the execution of King Charles, and of the protectorate of Cromwell, and did not hesitate to avow his attachment to the royal cause. He was one of the deputies appointed to meet Charles II. in Holland, and congratulate him on his restoration. His services were recognized by the offer of a bishopric, which he refused from conscientious scruples. The increasing tyranny and intolerance of the High Church party compelled him to give up even his royal chaplaincy.

Two of his sons were educated for a religious profession: one, Dr. BENJAMIN C., became a High Churchman, and wrote *A Discourse against a Scrupulous Conscience*; the other, EDMUND C., was ejected for nonconformity, and had a son, also named Edmund, who acquired some reputation as the biographer of the ejected clergy.

CALANDO, *ka-lăn'do*, in Music: Italian expression, meaning diminishing by degrees from forte to piano; it differs from decrescendo or diminuendo, as the tempo, at the same time, is slightly retarded, though not so much as in ritardando. The proper performance of the C. is purely a matter of good taste and feeling, depending on the performer.

CALAN'DRA· see CORN WEEVIL.

CALANDRONE, *ka-lăn'drôn*: wind-instrument of music, used by the Italian peasants, for simple melodies, and sometimes for accompanying their national songs. It has the holes of the common flute, but the intonation is produced as in the common pipe.

CALANGAY, *ka-lăn'gā*: a species of white parrot.

CALAS, *kā-lās'* or *kā-lā'*, JEAN: 1698, Mar. 19—1762, Mar. 9; b. Lacaparède, in Languedoc, France. He lived as a tradesman in Toulouse, where he had a very good reputation. One evening after supper (1761, Oct. 13) the eldest son of the C. family, Marc Antoine, a youth addicted to gambling, and subject to fits of deep melancholy, was found hanged in the warehouse. There was not a shadow of a reason for any other theory of his death than that of suicide; but popular rumor accused the father, or other members of the family, of murdering the eldest son, 'because he had contemplated conversion to Rom. Catholicism.' It was also asserted that a young man named

CALASAYA BARK—CALASH.

Lavaysse, who was in the house on the fatal evening, had been despatched 'by the Protestants of Guyenne to perpetrate the murder.' The clergy exerted their influence to confirm the populace in their delusion. At Toulouse the White Penitents celebrated with great solemnity the funeral of the young man, and the Dominican monks erected a scaffold and placed upon it a skeleton, holding in one hand a wreath of palms, and in the other an abjuration of Protestantism. The family of C. was brought to trial for the murder, and several deluded and (probably) some bribed witnesses appeared against them. A Rom. Cath. servant-maid, and the young man Lavaysse, were also implicated in the accusation. C., in his defense, insisted on his uniform kindness to all his children; reminded the court that he had not only allowed another of his sons to become a Rom. Cath., but had also paid an annual sum for his maintenance since his conversion. He also argued from his own infirmity that he could not have prevailed over a strong young man, and referred to the well-known melancholy moods of the deceased as likely to lead to suicide; and, lastly, he pointed out the improbability that the Rom. Cath. servant-maid would assist in such a murder. But all his arguments proved unavailing, and the parliament of Toulouse sentenced the wretched man—by a majority of eight votes against five—to torture and death on the wheel. With great firmness and protestations of innocence to the last, the old man died on the wheel. His property was confiscated. His youngest son was banished for life from France, but was captured by the monks, and compelled to abjure Protestantism. The daughters were sent to a convent. The young man Lavaysse was acquitted, and the widow of C. escaped into Switzerland, where she was so fortunate as to excite the benevolent interest of Voltaire, who brought the whole affair before the public, and, in his book *Sur la Tolérance*, proved that C. had fallen a victim to religious hatred and popular fanaticism. A revision of the trial followed, and, after full investigation, the parliament at Paris declared (1765, Mar. 9), C. and all his family innocent. Louis XV. gave to the bereaved family the sum of 30,000 livres; but, neither the parliament of Toulouse nor the fanatical monks were ever brought to account for this judicial murder.

CALASA'YA BARK: see CINCCHONA.

CALASCIBETTA, *ká-lá-she-bět'tá*, or CALATAS-CIBETTA, *ká-lá'tá-she-bět'tá* [Saracenic = Castle of Xibeth or Scibet]: town of Sicily, near its centre, 54 m. s. e., of Palermo, province of Caltanissetta. The town is mean and dismal looking, and is built on a steep and isolated height, the summit of which is 2,570 ft. above the sea, and commands a magnificent view. It was founded 1080. The only notable object is the tower of the principal church, of early architecture. Pop. 6,600.

CALASH, n. *kă-lăsh'* [F. *calèche*: It. *calessa*: Sp. *calesa*—~~from~~ Pol. *kolaska*, a common cart—from *kala* a circle or

CALASIAO—CALATRAVA.

wheel]: a light carriage with low wheels; a hooded carriage; a lady's hood.

CALASIA'O : town of the island of Luzon (Philippines). The people are engaged in the manufacture of straw-hats, cigar-cases, etc. Pop. 18,000.

CALASPARRA, *ká-lás-pâr'rá*: town of Spain, province of Murcia, 40 m. n.w., of the city of Murcia. The inhabitants are chiefly engaged in agricultural pursuits. Pop. 5,275.

CALATABELLOTA, *ká-lá'tá-běl-lō'tá*: town of Sicily, province of Girgenti, 27 m. n.w. of the city of Girgenti. In the immediate vicinity is the site of the ancient *Triocala*, chief fortress of the insurgents in the second Servile war B.C. 103-100. Pop. about 6,000.

CALATAFIMI, *ká-lá'tá-fě'mē*: town of Sicily, province of Trapani, 8 m. s.w., of Alcamo, in a very fertile district. It is ill-built, and has a ruinous old Saracenic castle, Kalat-al-Fimi, from which it derives its name. There is a remarkable Mosaic altar in the church of Santa Croce. Here, 1860, Garibaldi's troops defeated the Neapolitan soldiers. Pop. 9,500.

CALATAGIRONE, *ká-lá'tá-jē-rō'nā*, or CALTAGIRONE, *kál-tá-jē-rō'nā*: city of Sicily, province of Catania, 34 m. s.w. of the city Catania. It is well built, with wide streets, and has the fame of great wealth. It has manufactures of cotton fabrics and pottery. Pop. 28,119.

CALATANAZOR, *ká-lá-tá-ná-thōr'*: town of Aragon, Spain, about 10 m. s.w., of Soria; notable for a great victory over the Christians obtained by Al-Mansur 1001. Pop. 1,500.

CALATAYUD, *ká-lá-tá-yōd'*: city of Aragon, Spain; on the Jalon, near its junction with the Jiloca, about 48 m. s.w., of Saragossa. It is built at the base of two rocky ridges, and out of the ruins of ancient *Bilbilis*, which lay about 2 m. to the east. The city is divided into a new and old portion, the former composed of mean old buildings. The latter has some good streets and handsome squares. C. has a noble old castle, and among its other noteworthy public edifices are the two collegiate churches and the Dominican convent. In the neighborhood are curious stalactitical caves. It has manufactures of linen and hempen fabrics, woollens, paper, leather, etc., and a trade in agricultural produce. Pop. 11,537.

CALATHIFORM, a. *kă-lăth'î-farwm* [L. *cal'ăthus*, a basket; *forma*, shape]: in *bot.*, hemispherical or concave, like a bowl or cup.

CALATRAVA, *ká-lá-trá'vá*: an order of knighthood in Spain, instituted at Calatrava la Vieja (q.v.). The statutes of the order, framed by the chapter-general of the Cistercian monks, were sanctioned by the Bishop of Toledo, 1164, and afterward by the pope. At subsequent periods, many privileges were added. After the death of the king, their patron, some of the knights were no longer willing to obey the abbot, and they consequently separated them-

CALATRAVA.

selves from the monks, and elected a grand-master, Don Garcias de Redon. At a later period, they again united themselves to the Cistercians, after they had gained rich possessions from the Moors both in Spain and Portugal. When Castile had fallen into anarchy, and the other kingdoms were exhausting themselves by internal feuds, the war against the unbelievers was almost entirely carried on by the knights of C. Their almost uniform success, however, gave rise to rashness ; the knights were defeated by Emir Jacob ben Yuseff ; nearly all of them perished, and Calatrava was occupied by the Moors. After this disaster, the knights transferred their seat to the Castle of Salvatierra, by the name of which they were long known. A truce of 12 years having been concluded, during which the order revived, the knights were able, at the battle of Las Navas de Tolosa, 1212, to turn the tide in favor of the Christians. They then returned to Calatrava. Notwithstanding their splendid achievements, the knights of C. never possessed the vast wealth of their brethren of St. James of Compostella (q.v.), a fact probably accounted for by their having ceded a part of their conquests to the orders of Alcantara and Aviz. But their grand-masters, who were chosen from the highest families in Spain, were very powerful, and exercised vast influence on public affairs. They did not, however, escape the jealousy of the crown. Two of them were accused of treason, and died on the scaffold ; and on the death of the 13th grand-master 1489, the administration of the order was transferred to the king by a bull of Pope Innocent VIII. By way of compensation for the loss of their independence, the knights were permitted to marry once, though they were still bound to make vows of poverty, obedience, and conjugal chastity ; and latterly to profess belief in the immaculate conception. Their original costume consisted of a coat of white mail, with a white scapulary, a black cap, and a pilgrim's hood ; but this dress the Anti-pope Benedict XIII., 1397, granted them permission to exchange for a civil apparel. Their present costume is a white mantle.



Red Cross of Knights of Calatrava.

with a red cross cut out in the form of lilies upon the left breast ; while the cross of the order has the same symbol

CALATRAVA LA VIEGA—CALCAR.

on a silver ground. Two convents for nuns were attached to the order, and were at one time richly endowed. The nuns, attached to the order of C. in 1519, wore the dress of Cistercian nuns, with the cross of the order on the left side of the capoch, fastened to the scapulary.

CALATRAVA LA VIEGA, *kâ-lâ-trâ'vâ lâ ve-â'hâ*: ruined city of Spain, on the Guadiana, about 12 m. n.e. of Ciudad Real. In the middle ages it was a strongly fortified place, but nothing now remains but a single tower. Its defense against the Moors, undertaken by Raymond, abbot of Fitero, and Diego Velasquez 1158, after it had been abandoned by the Templars, is famous on account of its having originated the order of the Knights of Calatrava, long one of the most honorable in Spain. The town was called C. la Viega, or Old Calatrava, in order to distinguish it from the convent of the knights of the order of Calatrava, erected in the neighborhood, 1214, called Calatrava la Nueva.

CALBURGA *kâl-bêr'ga*: town of the Nizam's dominions in Hindustan, about 110 m. w. of Hyderabad; on a tributary of the Beemah, itself a tributary of the Kistna or Krishna. It has been successively the capital of Hindu and Mohammedan sovereignties.

CALCAIRE GROSSIER, *kâl-kâr grô-sî-â* [F., coarse limestone]: French representative of the Bracklesham Eocene beds. It consists of compact limestones with seams of chert, and intercalated marls and freestones. The fossils are fresh water and marine mollusca, so abundant that in one spot near Grignon no less than 400 distinct species have been procured. Associated with the fresh-water remains are the bones of reptiles and mammalia.

CALCAIRE SILICEUX, *kâl-kâr sî-lî-sîh* [F., siliceous limestone]: French representative of the Bembridge Eocene strata. These compact siliceous limestones extend over a wide area in the Paris basin. Their few fossils are fresh water and land shells.

CALCANEUM, n. *kâl-kâ'nê-ûm* [L. *calcănĕum*, the heel]: in *anat.*, the great bone of the heel. **CALCA'NEAL**, a. *-nê-ûl*, pertaining to.

CALCAR, n. *kâl'kâr* [L. *calcar*, a spur]: in *bot.*, a projecting hollow or solid process from the base of an organ: the spur of rasorial birds; the rudiments of hind limbs of certain snakes. **CAL'CARATE**, a. *-ât*, having a spur, or like one; spurred.

CALCAR, n. *kâl'kâr* [mid. L. *calcârĭă*, a lime furnace or kiln—from *calx*, lime; *calcârĭûs*, pertaining to lime]: the furnace in which the first calcination of sand and potashes for making glass is effected. **CALCAREOUS**, a. *kâl-kâ'rĭ-ûs*, having the qualities of lime; containing lime; composed of the carbonate of lime. **CALCA'REOUSNESS**, n. **CALCAREOUS TUFFA**, a loose and friable variety of carbonate of lime. **CAL'CARIFEROUS**, a. *-kâ-rĭf'er-ûs* [L. *fero*, I bear]: lime-yielding.

CALCAR, *kâl'kâr*, or **KALCKERM**, *kâl'kĕrm*, **JAN VAN**: 1499–1546; b. Calcar, in the duchy of Cleves; painter.

CALCAREOUS—CALCAREOUS SPAR.

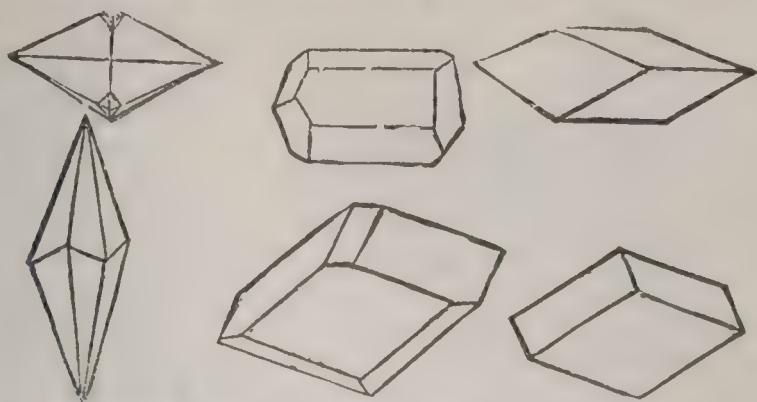
His studies were completed at Venice under Titian, whose manner, as also that of Raphael, he followed so closely that his works have sometimes been confounded with theirs. He drew the figures for Vesalius's anatomical work, and nearly all the portraits in Vasari's *Lives*. One of his best pictures is the *Mater Dolorosa*, at Stuttgart. His *Nativity*, in which the light appears to proceed from the infant Jesus, was a favorite of Rubens, and afterward purchased by the Emperor Ferdinand. The Louvre has one of his portraits. He died at Naples.

CALCAREOUS, *kāl-kā'ri-ūs*, in Chemistry: term applied to substances containing much lime. Thus, *C. waters* are those which hold in solution much carbonate and sulphate of lime, and which are generally known as hard waters, and form a deposit in kettles and other vessels when heated therein.—*C. rocks* are those in which lime is the prevailing element. They may be chemically formed, as in the case of tufas; where a saturated solution of carbonate of lime in water is deposited from evaporation or other causes; but they are generally aqueous rocks, the materials of which are supplied by animal remains. Thus, many rocks, like the mountain-limestone, are composed of shells, corals, and encrinites; while others, like chalk, consist of foraminifera and fragments of other minute testacea. A crystalline structure, varying in degree from the partially crystallized carboniferous limestones to the saccharine statuary marble, is produced in calcareous rocks by metamorphic action. Oolite is a variety of limestone composed of small egg-like grains resembling the roe of fish. The existence of lime in rocks can always be detected by the application of dilute nitric or muriatic acid, when it effervesces from the liberation of the carbonic acid. Pure lime is obtained from calcareous rocks by calcining them—i. e., by driving off the carbonic acid and other volatile matter by heat.—*C. soils* are produced from the disintegration of calcareous rocks. When the rocks are perfectly pure, they generally yield barren soils, as in many chalk and limestone districts of Britain; but when the lime is mixed with clay, so as to form marl, and has a little vegetable matter added, it forms an excellent though rather light soil. Calcareous soils are difficult of drainage, owing to the property that soft lime has of retaining water, though it easily yields it up by evaporation. Such soils are consequently soon dry at the surface after rain, yet rarely suffer severely from drought.—*C. springs* are springs charged with calcareous matter (see **CALCAREOUS TUFA**), which is deposited from the waters in form of incrustations.

CALCAREOUS SPAR, or **CALC-SPAR**, *kālk'spār*: carbonate of lime, rhombohedral in its crystallization. It differs from arragonite only in crystallization: see **ARRAGONITE**. C. S. occurs in all geological formations, and is one of the most abundant of minerals. It often completely fills cavities in rocks; and although it has been prevented by want of space from assuming a crystalline form, is readily divided by the knife and hammer into rhomboids, the primary form of its crystals being a rhomboid, of which

CALCAREOUS TUFA—CALCEOLA.

The greatest angles are $105^{\circ} 5'$. Its secondary forms are more numerous than those of any other mineral. More



Calcareous Spar.—Various Forms of Crystals.

than 700 have been observed. One of the most common, a rather elongated pyramid, is sometimes called *Dog-tooth Spar*. C. S. is colorless and transparent, except from casual impurity; and when perfectly transparent, it has in high degree the property of double refraction of light, discovered in it by Bartholinus. The presence of foreign substances frequently renders C. S. gray, blue, green, yellow, red, brown, or even black.

The name *Iceland Spar* has often been given to C. S., at least to the finest colourless and transparent variety, because in Iceland it is found massive in trap-rock. *Slate Spar* is a lamellar variety, often with a shining, pearly lustre, and a greasy feel.

CALCAREOUS TUFA, *tū'fa*, or **CALC-TUFF**, *kālk'tŭf*, or **TUFACEOUS LIMESTONE**: mineral deposit, frequent near calcareous springs; in chemical composition, nearly identical with limestone and marble, but distinguished by its spongy and cellular structure. It is generally rather soft, brittle, and friable, especially when freshly quarried; afterward some varieties of it solidify and harden, and are useful as building stone. The *travertino*, used for building at Rome, is a hard calcareous tufa. The temples at Paestum are of C. T., which has now acquired great strength. The color of C. T. is generally yellowish-gray, sometimes yellow or yellowish-brown. It occurs massive, or assumes many uncrystalline forms, as tubular, botryoidal (like clusters of grapes), cellular, etc. Sometimes it incrusts animal and vegetable remains. It is sometimes used as a filtering stone. At Clermont, France, a calcareous spring has deposited a block of C. T., 240 ft. long, 16 ft. high, 12 ft. wide.

CALCEDONY, n. *kāl-sēd'ō-nī* [from *Chalcēdon* in Bithynia on the Propontis]: a non-crystalline mineral of the quartz family, closely allied to the opal and agate—also written **CHALCEDONY** (q.v.). **CALCED'ONYX**, n. *-nīks*, varieties of agates of an opaque white color, alternating with translucent grayish.

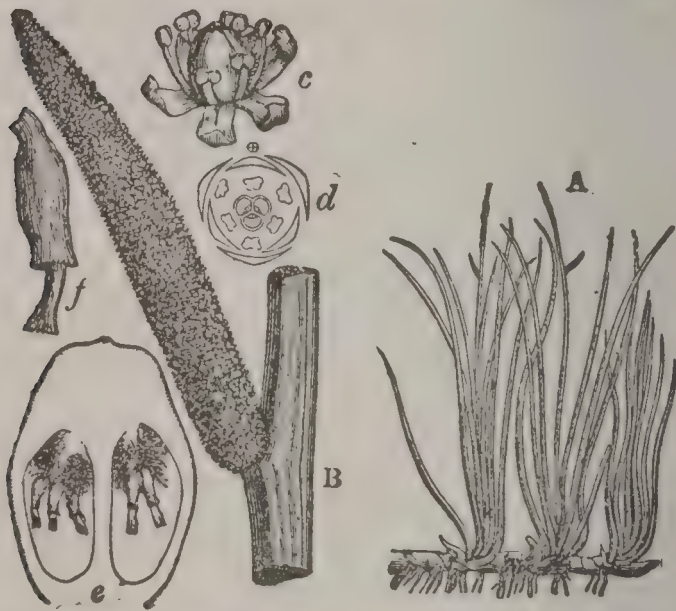
CALCEOLA, n. *kāl-sē'ō-lā* [L. *calcēolus*, a small shoe]: in *geol.*, a fossil coral of the Devonian period having an operculum of a single valve or piece, formerly thought to be a brachiopod.



Calabashes, from Kew Gardens, and Private Collection.



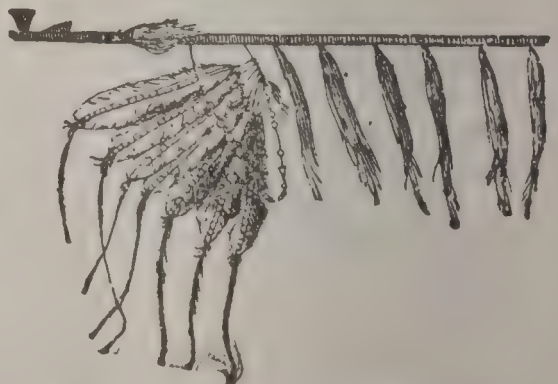
Calceolaria.



Calamus.—A, *Acorus Calamus*, showing Rhizome; B, Flower-head; c, Separate floret; d, Floral diagram, showing essentially liliaceous type; e, Vertical section of ovary; f, Single ovule.



Calliope, from antique statue in the Vatican.



Calumet, from the Christy Collection in the British Museum.

CALCEOLARIA—CALCIUM.

CALCEOLARIA, n. *kāl'sī-ō-lā'rī-a* [L. *calcēōlārīūs*, a shoemaker—from *calcēōlus*, a small shoe]: genus of plants of the nat. ord. *Scrophulariaceæ* (q.v.), of which there are numerous species, natives of S. America, chiefly of the part of the Andes more than 9,600 ft. above the sea, a few of them reaching almost to the utmost limits of vegetation; though some are found in lower and warmer situations, and some in the s. extremity of the American continent. They abound so much in some parts of Chili and Peru as to give a peculiar aspect to the landscape. The calyx in this genus is 4-partite; the corolla, 2-lipped; the lower lip remarkably inflated, so as to form a bag, and the shape of the whole in some species considerably resembling that of a slipper. There are only two fertile stamens, and the capsule is semi-bivalvular with bifid valves. Some of the species are shrubby, some herbaceous, almost all the herbaceous species being perennial. Many of them have corymbs of numerous showy flowers. Yellow is the color which chiefly prevails in the flowers of the original species, and next to it purple; but the art of the gardener has succeeded in producing varieties and hybrids with many other rich and delicate tints. Calceolarias have been florists' flowers since about 1830, and in no genus is the production of hybrids more easily or frequently effected. They are easily propagated by cuttings. Few plants require more liberal supplies of water. Some species have the popular name of *slipper-wort*. Some of the species are used in South America for dyeing. The roots of *C. arachnoidea*, parent of many of the hybrids common in America and Europe, are largely used in Chili, under the name of *Relbun*, for dyeing woollen cloths crimson. **CALCEOLATE**, a *kāl-sē-ō-lāt*, having the form of a slipper; applied also to the hollow petals of orchids.

CALCIFY, v. *kāl'sī-fī* [L. *calcem*, lime; *fīō*, I become]: to convert into lime. **CAL'CIFYING**, imp. **CALCIFIED**, pp. *kāl'sī-fīd*, converted into lime; characterized by lime. **CALCIFICATION**, n. *kāl'sī-fī-kā'shūn*, conversion or change into lime: see **CALCINE**.

CALCINE, v. *kāl-sīn'* or *kāl'sīn* [F. *calciner*, to calcine—from It. *calcina*, lime—from L. *calcem*, lime]: to treat a substance like lime—that is, to burn it as in a kiln; to reduce to cinders or ashes by means of heat; to reduce a substance by heat to a state of powder or ashes. **CAL'CINING**, imp. **CAL'CINED**, pp. *-sīnd*. **CALCIN'ABLE**, a. *-ā-bl*. **CAL'CINATION**, n. the act of reducing to cinders or ashes by heat; the process of reducing any ore or mineral to a calx by heat, essentially a process of oxidation (see **CALX**). **CALCIFEROUS**, a. *-sīf'ēr-ūs* [L. *fero*, I produce]: containing lime. **CAL'CIFORM**, a. *-sī-fa'orm* [L. *forma*, a shape]: in the form of calx or lime. **CAL'CITE**, n. *-sīt*, a crystallized variety of carbonate of lime.

CALCIUM, n. *kāl'sī-ūm* [L. *calcem*, lime]. an elementary body, the metallic base of calx or lime. **CALCIC**, a. *kāl'sīk*, pertaining to calx or lime; denoting the presence of calcium. **HYDRATE OF CALCIUM** or **CALCIC HYDRATE**, slaked lime. **CALCIC SULPHATE**, gypsum. **CALCIC PHOSPHATE**, bone phosphate, or phosphate of lime.

CALCIUM—CALCULATE.

CALCIUM: the metal present in chalk, stucco, and other compounds of lime. It may be obtained by passing a powerful current of voltaic electricity through fused chloride of C. (CaCl), when the metal separates in minute globules. It is a yellowish-white metal, can be rolled into sheets, and hammered into leaves, and is intermediate between lead and gold in hardness. It is represented by the symbol Ca, has the atomic weight or equivalent 20 (new system, 40), and has the density of 1.578, or nearly half as heavy again as water. At ordinary temperatures, it slowly tarnishes by oxidation; and when placed in contact with water, it rapidly decomposes the water (HO) forming lime (CaO), while hydrogen escapes. To be retained bright, C. must be kept under the surface of naphtha. At a red heat, it melts and burns with a dazzling white light, accompanied by scintillations. See LIME.

CALCIVOROUS, a. *kāl-siv'ō-rūs* [L. *calcem*, lime; *vōro*, I devour]: eroding or eating into limestone rock.

CALCOGRAPHY, n. *kāl-kōg'rā-fī* [L. *calcem*, lime or chalk; Gr. *grapho*, I write]: the art of engraving in the style of a chalk-drawing.

CALCOTT, Sir AUGUSTUS WALL: also **CALCOTT**, JOHN WALL (common but erroneous form): see **CALLCOTT**.

CALC-SINTER, n. *kālk'sin'tēr* [L. *calcem*, lime; Ger. *sinter*, sinter; *sintern*, to drop]: a stalagmitic or stalactitic deposit from calcareous waters. **CALC-SPAR**, or **CALCAREOUS-SPAR**, crystallized carbonate of lime or calcite. **CALC-TUFF**, *-tūf*, or **CALCAREOUS-TUFA**, *-tūfā*: see under **CALCAR 2**.

CALC-SINTER, *kālk'sin-tēr*: a mineral, chemically identical with the purest marble and calcareous spar, but peculiarly characterized by its fibrous structure. It is formed from water holding carbonate of lime in solution, and occurs generally incrusting the roofs, walls, and floors of caves, particularly those in limestone rocks; often assuming curious and even fantastic forms. Macalister's Cave, in the Isle of Skye, and the limestone caves of Derbyshire, are the most celebrated British localities. But the stalactitic cave of Antiparos, in the Grecian archipelago, is a far more famous locality for this mineral, which is often called *Calcareous Alabaster*, and used for the same purposes with the true alabaster (q.v.), to which it is in some respects preferable, particularly as not being liable to injury from exposure to the air. Volterra, in Tuscany, is another famous locality for Calc-sinter.

CALCULATE, v. *kāl'kū-lāt* [L. *calculātus*, calculated—from *calculus*, a pebble: F. *calculer*, to calculate]: to perform any operation in arithmetic or mathematics in order to find a result; to compute; to estimate anything; to estimate; in *OE.*, to predict. **CAL'CULATING**, imp.: **ADJ.** having skill in calculations, or in the habit of making them; far-seeing. **CAL'CULATED**, pp. **CAL'CULATOR**, n. one who. **CAL'CULABLE**, a. *-lā-bl*, that may be calculated. **CAL'CULATION**, n. *-lā'shūn*, computation; the result of an operation in arithmetic; an estimate arrived at in the mind by comparing various facts. **CAL'CULA'TIVE**, a. *-tīv*, tending to

CALCULATING MACHINE.

calculate. CALCULE, v. *kāl'kāl*, in *OE.*, to calculate.—
SYN. of 'calculate': to reckon; compute; count; estimate;
enumerate; rate.

CALCULATING MACHINE: a remarkable application of machinery to the work of manipulating figures. Various machines have been constructed for this purpose, differing in range of function, and in principle. By the *Arithmometer*, invented by M. Thomas, of Colmar, France, all ordinary arithmetical operations are executed; and by a machine contrived by M. M. Scheutz, which rests on the principle of *Differences* (q.v.), by the turning of a wheel, the successive terms of any series whose law may be confided to it, are produced—the machine at the same time *printing* a large proportion of its results, and thus providing for the accuracy of its tables. An Englishman, Charles Babbage (q.v.), made the greatest advance in this application of machinery. Among his inventions was a *Difference Engine*, of very comprehensive powers, capable of managing series so complex that the differences of its terms do not reach zero until the seventh order is reached (*vide* art. DIFFERENCES, CALCULUS OF). An immense range of nautical and astronomical tables lie within these limits; and the machine further tabulates approximately any series whatever that can be treated by the *Method of Differences*. While engaged in constructing the *Difference Machine* Mr. Babbage, probably through his increased experience of the capabilities of machinery, was led to form a new conception—that, namely, of the *Analytical Machine*. He actually succeeded so far as to devise the means of making his machine perform all the elementary operations of addition, subtraction, multiplication, and division; and it is clear that all changes that can be produced on quantity are merely combinations of these. If, then, he could but have made his machine perform these operations at command, and according to any special order, it could have clearly developed any function whatever whose law is ascertained and fixed. A solution of this difficulty was suggested by the Jacquard Loom (q.v.), in which the *cards* oblige a machine capable of working *any* pattern to work out one particular pattern; and Mr. Babbage having succeeded so far as to form a machine capable of executing any development, expected, by means of *cards of operations*, to compel his C. M. to work according to one fixed law, and no other. Government, however, did not see its way to make the further grants required for this machine, and at Mr. Babbage's death, in 1871, nothing further had been done toward its completion. The *Difference Machine* is now lying, an unfinished curiosity, in the museum of King's College, London. Both machines are described in the third vol. of Taylor's *Scientific Memoirs*. The *Difference Engine*, constructed by Grant for the Univ. of Pennsylvania, is said to be less expensive than Babbage's and less complicated than Scheutz's; though provided like it with an apparatus for printing the results.

CALCULUS.

CALCULUS, n. *kāl'kū-lūs* [L., a pebble]: in *surg.*, a stone in the bladder; a branch of mathematics. CAL CULAR Y, a. *-lēr'ī*, relating to the disease of the stone: N. the mass of little stony knots in some fruits. CAL'CULOUS, a. *-lūs*, stony; gritty; also CAL'CULOSE, a. *-lōz*.

CAL'CULUS, or STONE, in Medicine: hard concretion formed within the animal body, in consequence of the deposition in the solid form of matters which usually remain in solution: see CONCRETION. The concretions most commonly termed calculi are those formed in the kidneys or bladder (*Urinary C.*); and those formed in the gall-bladder or biliary ducts (*Biliary C.*). Both give rise to very painful symptoms, and may even threaten life.

Biliary C., or *Gall-stone*, may generally be presumed to exist when excessively severe pain suddenly arises in the right side beneath the border of the ribs, and when in a few hours jaundice comes on, showing that some obstruction has existed to the outward flow of the bile. But the absolute proof that these symptoms depend on C. is often wanting. The pain is fortunately transitory, but is more severe while it lasts than almost any other known form of suffering, unless it be that of a C. in the kidney and ureter. It may be relieved by large doses of opium, but the remedy requires to be cautiously given, as even in medical hands fatal accidents have occurred in its use. Gall-stones, when impacted in the ducts sometimes have proved fatal; but much more frequently they find their way, sooner or later, into the intestines. They are almost invariably composed of cholesterine (q.v.), with coloring matter and mucus, arranged in layers in a semi-crystalline disposition.

Urinary C. is a disease of all ages, but most common in advanced life and in the male sex. It is also frequent in gouty persons, or among those who pursue sedentary occupations, and live freely. It is rare among those who live much in the open air, or who take much violent exercise, and use little animal food and wine. Among sailors, it is peculiarly rare. In certain regions, the disease is said to be frequent. In India, where some of the predisposing circumstances mentioned above do not prevail, stone is by no means uncommon. It would appear, therefore; that the predisposing causes of C. are still imperfectly understood. In its early stages, the disease usually presents itself in the form of *Gravel*, shown by the passage of numerous very small portions of gritty concretions, which may be observed in the urine as a deposit like sand, or like small grains of Cayenne pepper. When such deposits occur frequently, especially if they are present at the time of passing the urine, and not merely after it has cooled, there is reason to apprehend the formation of calculus. If, in these circumstances, there are pains of a dull character in the loins, with occasional twinges of sharper suffering, no time should be lost in seeking medical advice. If a fit of very severe pain should occur in a person for some time affected with gravel, if the urine be bloody, if agonizing twinges, commencing in the loins, sting downward into the thigh or the groin, it is probable that a stone has already formed in the kidney,

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and is being displaced toward the bladder. C. in the bladder is at first attended with little suffering, as compared with that caused by the stone in its passage downward from the kidney; but unless removed or evacuated, the C. is sure to enlarge, and it then becomes the cause of one of the most painful diseases that afflict humanity. The existence of a stone in the bladder, however, should never be taken for granted without a surgical examination, as all the symptoms are deceptive in certain cases. The most striking and perhaps the most trustworthy evidence of stone in the bladder, apart from the use of the sound (see LITHOTOMY), is smarting and burning pain experienced after the bladder has been emptied, together with occasional temporary stoppage in the flow of urine. The correct appreciation of all the symptoms, however, demands, considerable familiarity with such cases.

The discovery of the tendency to urinary C. at an early period of its growth, has been greatly aided by the use of the microscope and of chemical tests. Generally speaking, it may be said that whenever the urine, after standing for a few hours, can be observed to contain more sediment than a very slight cloudiness toward the bottom of the



Alternating Calculus—from Dr. Marcet's Essay on Calculus:
a, uric acid nucleus; *b*, oxalate of lime; *c*, phosphates of lime, and of magnesia and ammonia.

vessel, there is room for careful inquiry into the existence of some derangement of the health. But all sediments are not equally apt to determine C., nor is the treatment of the different kinds of sediment at all similar; care should therefore be taken to determine, from time to time, whether the character of the sediment may have undergone a change, so that the treatment may be adapted accordingly.

The chief varieties of urinary C. are—1. Uric acid (red sand); 2. Urates of ammonia, soda, lime, etc. (brick-dust sediment); 3. Phosphates of ammonia and magnesia, lime,

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etc.; 4. Oxalate of lime; 5 Carbonate of lime (chiefly in domestic animals); 6. Cystine; 7. Xanthic oxide (a very rare form, discovered by Dr. Marcet). Calculi are frequently found to be composed of numerous successive layers, having a perfectly distinct chemical composition. Urates and phosphates in particular frequently succeed each other, and form what is called an alternating calculus.

When C. has once fairly formed in the urinary passages, it seems probable that no absolute cure exists except the removal of it, if possible, from the body (see LITHOTOMY and LITHOTRITY); but in the stage of gravel, and still more in the earlier stages detected by careful examination of the urine, much may be done to check the tendency to this distressing and dangerous malady. The chief remedies consist in careful regulation of the diet and mode of living, together with the use of solvents adapted to the particular form of deposit. See URINE.

CALCULUS, THE INFINITESIMAL, otherwise sometimes called the Transcendental Analysis: a branch of mathematical science which commands, by one general method, the most difficult problems in geometry and physics. The merit of the invention of this powerful mathematical instrument has been claimed for Leibnitz, but is undoubtedly due with equal justice to Newton, who laid the foundations for it in that celebrated section of his *Principia* in which he demonstrates the chief theorems regarding the ultimate values or limits of the ratios of variable quantities. The view of one class of writers is, that these distinguished men invented the C. simultaneously and independently; and it is the fact that Leibnitz's system is unfolded from premises differing somewhat from those of Newton. See FLUXIONS. Another class of writers hold that Newton is the real inventor, and that to Leibnitz no more can be conceded than that he was the first who, using the suggestions of Newton's genius, gave a systematic statement to the principle of the transcendental analysis, and invented its appropriate symbolic language. He had the doctrine of limits before him when he wrote, and did little more than unfold more fully the logic of the processes therein suggested, and exhibit them in algebraical forms.

The Infinitesimal C., both in its pure and applied forms, whether of geometry or mechanics, is a branch of the science of number; its symbols are of the same kind, are operated on according to the same laws, and lead to analogous results. It differs from the other branches of the science of number, such as arithmetic and algebra, in regarding number as continuous—i. e., as being capable of gradual growth and of infinitesimal increase, whereas they deal with finite and discontinuous numbers. It differs from ordinary algebra in another respect. In the latter, the values of unknown quantities, and their relations with each other, are detected by aid of equations established between these quantities *directly*; in the C., on the other hand, the equations between the quantities are not directly established, but are obtained by means of other equations primarily established, not between them, but certain derivatives from

them, or elements of them. This artifice is most fertile, for it can be shown that in the great majority of cases the relations of quantities concerned in any problem may more easily be inferred from equations between these their derivatives or elements than between themselves.

It will be seen that the C. created a new notion of number—as continuous or growing. It is necessary, in order to a proper conception of it, that a precise idea should be formed of a *differential*. The simplest idea of a differential is unquestionably that got by considering number as made up of infinitesimal elements, and a differential or ‘infinitesimal’ as being the value of the difference between a number at one stage of its growth and at another *very* near it. Every finite number being—in the view of the C. as first conceived by Leibnitz—composed of an infinite number of these infinitesimal elements, certain axioms at once present themselves regarding infinitesimals; as, for instance, ‘that a finite number of them has no value at all when added to a finite quantity.’ Many other such axioms readily follow, from which, on this view, the whole theory of the Infinitesimal C. may be constructed. But there are logical objections to this mode of forming the theory of the transcendental analysis, and of three views that have been propounded, that now universally accepted as the most logical, and as being capable of the easiest application, is that founded on the method of limits, already referred to as the invention of Newton. The meaning of a differential on this view will now be explained.

It is clear that the C. can be applied only where numbers may have the continuous character—i. e., where they are or may be conceived as being variable. If two unknown quantities are connected by a single equation only, we clearly have the condition satisfied, as where y and x are connected by the equation

$$(1) \quad y = F(x),$$

where F is a sign denoting some *function* of x , as $\tan. x$, $\cos. x$, x^2 , etc. This equality may be satisfied by innumerable values of y and x . One question which the C. solves is, How does y vary when x varies? To solve it, and, at the same time, show how the doctrine of limits affects the definition of a differential, suppose x , y , and $x + Dx$, $y + Dy$, to be two pairs of values of the variables which satisfy the above equation; then

$$(2) \quad y = F(x), \quad \text{and} \quad (3) \quad y + Dy = F(x + Dx).$$

From (2) and (3) we have, by subtraction,

$$(4) \quad Dy = F(x + Dx) - F(x);$$

whence we have the ratio

$$\frac{Dy}{Dx} = \frac{F(x + Dx) - F(x)}{Dx}$$

This ratio will generally change in value as Dx and Dy diminish, till, as they both vanish, which they must do simultaneously, it assumes the form $\frac{0}{0}$. Taking this form, it ceases to have a determinate actual value, and it is necessary to resort to the method of limits, to ascertain the value

to which it was approaching, as Dx and Dy approached zero. Let, then, dx and dy be any quantities whose ratio is equal to the limiting ratio of the increments Dx , Dy , so that

$$\frac{dy}{dx} = \text{limit} \frac{Dy}{Dx}$$

as Dx and Dy approach zero. Then dx and dy are the differentials of x and y . It may be observed that where x and y are connected as above, they cannot vary independently of one another. In the case assumed, x has been taken as what is called the *independent* variable, the question being, how does y vary when x varies. If y were made the independent variable, it would be necessary to solve the equation $y = F(x)$, if possible, so as to express x in terms of y . The result would be an equation $x = \phi(y)$.

This being obtained, we should find $\frac{dx}{dy} = \text{limit} \frac{Dx}{Dy}$ as before. It will be seen that on this view differentials are defined merely by their ratio to one another. Their actual magnitude is perfectly arbitrary. This, however, does not render an equation involving differentials indeterminate, since their relative magnitude is definite, and since, from the nature of the definition, a differential cannot appear on one side of an equation without another connected with it appearing on the other.

The idea of a differential being once comprehended, the reader will be able to understand, in a general way, the main divisions of the C., now to be delineated. So much is clear from what has been stated, that there must be two main divisions—one by which, the primary quantities being known, we may determine their differentials; and another by which, knowing the differentials, we may detect the primary quantities. These divisions constitute the Differential C. and Integral C. respectively.

1. THE DIFFERENTIAL CALCULUS.—Recurring to the formula already given we know

$$\frac{dy}{dx} = \text{limit} \frac{Dy}{Dx} = \text{limit} \frac{F(x + Dx) - F(x)}{Dx}$$

It is clear that, in the general case, $\frac{F(x + Dx) - F(x)}{Dx}$ at the limit will still be some function of x . Calling it $F'(x)$, we have generally $\frac{dy}{dx} = F'(x)$. $F'(x)$ is called the first differential coefficient of y or $F(x)$. Being a function of x , it may be again differentiated. The result is written:

$$\frac{d^2y}{dx^2} = F''(x),$$

$F''(x)$ being the second differential coefficient of y or $F(x)$; and again $F''(x)$ may be a function of x , and so capable of differentiation. Now, it is the object of the differential C. to show how to obtain the various differentials of those few simple functions of quantity which are recognized in analysis, whether presented singly or in any form of combination. Such functions are the sum, differ-

ence, product, and quotient of variables, and their powers and roots; exponentials, logarithms; and direct and inverse circular functions. The C. so far is complete as we can differentiate any of those functions or any combination of them—whether the functions be explicit or implicit; and with equal ease we may differentiate them a second or any number of times. This C. is capable of many interesting applications as to problems of maxima and minima, the tracing of curves, etc., which cannot here be particularly noticed.

2. THE INTEGRAL CALCULUS deals with the inverse of the former problem. The former was: Given $F(x)$, to find $F'(x)$, $F''(x)$, and so on. The present is in the simplest case—

viz., that of an explicit function: Given $\frac{dy}{dx} = F'(x)$, to find

$F(x)$. The methods of the Integral C., instead of being general, are little better than artifices suited to particular cases; no popular view can be given of these. In many cases, integration is quite impossible. The explanation of *integration by parts*, by *approximation*, *definite integrals*, and *singular solutions*, is far beyond the scope of the present work. The reader is referred to any of the numerous text-books on the subject. The Integral C. has applications in almost every branch of mathematical and physical science. It is specially of use in determining the lengths of curved lines, the areas of curved surfaces, and the solid contents of regular solids of whatever form. The whole of the lunar and planetary theories may be described as an application of the Integral C., especially of that branch of it which deals with the integration of differential equations. It is applied, too, in hydrostatics and hydrodynamics, and in the sciences of light, sound, and heat. In short, it is an instrument without which most of the leading triumphs in physical science could never have been achieved.

CALCULUS OF VARIATIONS.—The foundation of this C. is a method of differentiation, but of a peculiar kind. As above explained, the object of the differential C. is to determine the form which a function, such as $F(x)$, will assume if x receive an indefinitely small increment, such as Dx . In the C. of variations, the object is to ascertain and lay down the laws of the changes supervening on a slight alteration of the *form of the function*, or should $F(x)$ become F^1x . This C. commands with ease a class of problems called problems of isoperimeters, formerly insoluble. It has power also over mechanical problems, and many departments of high physics cannot be touched without its aid. Mr. Airy and Prof. Jellet have both written works on the subject, which may be consulted.

CALCULUS OF FINITE DIFFERENCES, CALCULUS OF FUNCTIONS.—For brief notices of these growths from the original Transcendental Analysis, see DIFFERENCE: FUNCTIONS.

CALCUTTA.

CALCUTTA, *kāl-kūt'ta* (*Kali Ghatta*, the ghaut or landing-place of the goddess Kali): capital of the province of Bengal, and metropolis of British India; on the left bank of the river Hooghly, an arm of the Ganges, $22^{\circ} 35'$ n. lat., $88^{\circ} 27'$ e. long.; about 100 m. from the sea by the river. C. was founded by Gov. Charnock, 1686, by the removal hither of the factories of the East India Company. In 1700, three villages surrounding the factories, having been conferred upon the company by the emperor of Delhi, in recognition of a present made to Azim, a son of Aurungzebe, they were forthwith fortified, and received the name of Fort William, in honor of the reigning king; but the place was subsequently termed Calcutta, the name of one of the villages. In 1707, C. had acquired some importance as a town, and was made the seat of a presidency. In 1756, however, a great misfortune befell the rising town; it was unexpectedly attacked by Surajah Dowlah, the Nawaub of Bengal, and being abandoned by a number of those whose duty it was to defend the place, it was compelled to yield after two days' siege. Only 146 men fell into the enemy's hands; but these were treated with shocking cruelty. Cast at night into a confined cell, about 20 ft. square—the notorious 'Black Hole' (q.v.)—they endured the most unheard-of sufferings, and in the morning it was found that only 23 out of 146 had survived the horrors of that night. The city remained in the hands of the enemy until eight months afterward, when Clive arrived in the country from England. In conjunction with Admiral Watson, Clive recaptured the town, and afterward concluded a peace with the Nawaub. Soon after this, and subsequent to the important victory of Plassey, the possessions of the East India Company were greatly extended by grants made by the emperor of Delhi, and C. once more advanced rapidly in prosperity. In 1852, C. was erected into a municipality, the proprietors paying assessments, and electing commissioners to apply the proceeds of these assessments in cleansing, improving, and beautifying the town.

The city extends about five m. along the river, and is somewhat less than two m. in breadth at its broadest part; area about eight sq. m., comprised for the most part between the river and the Circular Road, a spacious roadway which marks the landward boundary of the city proper. Beyond this road there lie extensive suburbs, the chief of which are Chitpore on the n., Nunden Baugh, Bahar-Simleah, Sealdah, Entally, and Ballygunge on the e., and Bhowaneepore, Allipore, and Kidderpore, on the s. The villages of Sulkeah, Howra, and Seebpoor are on the opposite side of the river, and contain the salt-golahs or warehouses of the government, extensive manufactories, dockyards, and ship-building establishments. The appearance of the city as it is approached by the river is very striking; on the left are the Botanical Gardens, destroyed by the cyclones of 1867 and 1870, but since replanted, and the Bishop's College, a handsome Gothic edifice, erected by the Soc. for the Propagation of the Gospel in Foreign

Parts; on the right is the suburb of Garden Reach, with its handsome country seats and beautiful gardens; further on are the government dockyards and the arsenal; beyond these is the Maidan Esplanade, which has been termed the Hyde Park of India, being the favorite place of resort of the *élite* of C. for their evening drive. Here, near the river, lies Fort William, the largest fortress in India, constructed at a cost of £2,000,000, and occupying, with the outworks, an area of about half a mile in diameter. It is garrisoned by European and native soldiers, mounts 619 guns, and its armory contains 80,000 stands of small-arms. Facing the Esplanade, among other fine buildings, is the Government House, a magnificent palace erected by the Marquis of Wellesley. Beyond this, extending n. along the river bank, is the Strand, two m. in length, and 40 ft. above low water, with various ghauts or landing-places. It is adorned by many fine buildings, including the Custom-house, the new Mint, and other government offices, and the appearance of these and other edifices has gained for C. the appellation of 'City of Palaces.' Among other places of interest are the Sudder Dewanee Adawlut, the principal court of justice; the town-hall, a fine building; the Bengal Club, Writers' Buildings, Bank of Bengal, Jesuits' College, Medical College, university, theatre, besides various churches, mosques, Hindu temples, and pagodas and numerous bazaars. There are a number of monuments, throughout the city, the most noticeable being those erected to the Marquis of Wellesley and Sir David Ochterlony. While the European quarter is distinguished for its fine public buildings and commodious dwelling-houses, the quarters occupied by the natives contain houses in most instances built of mud or bamboo and mats, and the streets are narrow and unpaved. Considerable improvements have, however, been effected of late; new and wider streets have been opened through crowded quarters; brick houses are fast replacing the huts, and an extensive system of drainage has been carried out, to the no small advantage of the inhabitants. The cyclone of 1867, Nov., destroyed 30,000 native houses, and that of 1870, June, likewise was very destructive.

The water supply of C. has recently been much improved. Formerly, the water was kept in large tanks, interspersed through the city, whence it was borne by water-carriers or *bahisties* in large leather bags. But within quite recent years, a supply of excellent water has been obtained from the Hooghly, about 15 m. above C., where it is filtered and sent down by pipes in the usual way. The result of this has been marked improvement in the health of the city. Gas has now taken the place of the oil-lamps formerly in general use for lighting the streets. Street railways have been recently tried in some of the principal streets, but as yet with little success. A canal girds a part of the city beyond the Circular Road.

The communications of C. afford great facilities for its extensive commerce. There are several lines of railway to various parts of India; the East Indian to Benares,

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Delhi, and Multan, its present terminus, whence it is to be continued to Kurachee; the Eastern Bengal, the extension of which to Gulundu was opened 1871; and the Calcutta and Southeastern to the mouth of the Ganges. The great Indian Peninsula railway branches off from the East Indian and connects C. with Bombay and Madras. C. is also connected by electric telegraph with the principal towns of India, and can communicate with England by three different lines. Uninterrupted communication is kept up with Great Britain by numerous and well-appointed steamers and sailing-vessels. This intercourse has been greatly facilitated by the opening of the Suez canal. Navigation on the Hooghly is dangerous, owing to the shifting sands; and though much has been attempted, little has been effected in the way of remedying the evil. The river, adjacent to the city, varies in breadth from a quarter of a mile to nearly a mile. Ships of 2,000 tons can ascend to Calcutta.

The growth of scientific and literary societies, here and elsewhere in India among the native communities, indicates hopeful progress and intellectual activity. The principal of these in C. are the Bengal Asiatic Soc. founded 1784 by Sir W. Jones, possessing a fine library, and a valuable and extensive museum; the Bethune Soc. for the promotion of intercourse between European and native gentlemen; the Dalhousie Institute, for the literary and social improvement of all classes of the community; the Bengal Social Science Assoc. and others. The university of C. was founded 1857, on the same basis as the London Univ. and exercises its functions over Bengal, the N. W. Provinces, Oudh, and the Central Provinces. Colleges have been instituted to prepare intending students. In 1879-80, of 3,512 candidates for admission to the Univ. of C., 1,291 passed the required examinations. Other educational institutions are numerous in C. The principal places for religious instruction are Bishop's College, intended chiefly for the education of missionaries and teachers, and the institutions of the Established and Free Churches of Scotland.

C. may be regarded as the great commercial centre of Asia. One-third of the whole trade of India is done here. The chief exports are cotton, silk, jute (raw and manufactured), rice, wheat, indigo, tea, sugar, shellac, opium, saltpetre, oil seeds, hides, and horns; while the more important imports are wearing apparel, machinery, iron goods, cotton and woollen goods, beer, wine, spirits, and coal. In 1887 the imports by rail, steamer, and country boat amounted to £60,955,973, and the exports to £24,942,353; the port was entered by 349 sailing-vessels of 507,862 gross tonnage, and by 676 steamers of 1,646,677 gross tonnage. The manufactures of C. have of late much increased. The principal industries are sugar refining, cotton manufacturing, flour, saw, and oil mills, and ship-building docks. Several newspapers are published. There are a few banks and numerous insurance and other companies, with a chamber of commerce. Living is comparatively cheap,

CALDAS—CALDERON.

and most of the luxuries of life, as well as its necessities, are to be had in the unpretentious shops of C. as readily as in most European towns. The annual fall of rain averages 64 inches; the temperature in the shade ranges in July from 78° to 87°, and in December from 60° to 79°.

C. is the headquarters of the gov. gen. of India, and the seat of the government, the supreme courts of justice, and of the court of appeal for the province of Bengal.

The inhabitants of C. are mostly Hindus; but there is also a proportion of Mohammedans. About 20,000 are Europeans; 20,000 Eurasians, or the progeny of white fathers with native mothers, and there is a considerable number of Armenians, Greeks, Jews, Parsees, and negroes. Besides these residents thousands of the three and a half millions who sleep at night in the surrounding districts of Hooghly and the 24 Pergunahs, flock during the day to C., on foot, by boat, or by railway, to their daily toil. Pop. of town proper (1837) 229,700; (1872) 447,601, or with Howrah and suburbs 892,429; (1881) without Howrah, 683,458; (1901) with suburbs, 1,125,400.

CALDAS, *kāl'dās*, or CALDETAS, *kāl-dā'tas* [Lat. *callidus*, hot]: Spanish term for warm springs (*aguas*, waters, being understood); these are very abundant in the Peninsula, where a great number of places have received their names from the presence of these mineral waters.

CALDECOTT, RANDOLPH: Eng. art.; 1846, Mar. 22—1886, Feb. 12; b. in Chester; bank clerk 1861-72. In 1872 settled in London and gave his atten. to art, for which he developed a fine taste. Chieflly remembered by the admirable *Caldecott's Picture-books*, which began in 1878 with *John Gilpin* and *The House that Jack Built*.

CALDER, *karol'dér*: river in the West Riding of Yorkshire, England. It rises in a marsh on the borders of Lancashire, near Burnley, runs tortuously e. in the deep valley of Todmorden, past Halifax, Dewsbury, and Wakefield. It then runs n.e., and after a total course of 40 m., it joins the Aire near Pontefract, that river falling into the Ouse. The C. is important as forming a considerable portion of the canal route through Yorkshire and Lancashire, between the e. and w. coasts of England.

CALDERON, *kāl-dā-rôn'*, Don SERAFIN ESTEBANEZ: Spanish poet: b. Malaga about the beginning of the 19th century; d. 1867, Feb. He studied law at the University of Granada, and in 1822 became professor of poetry and rhetoric there. A volume of poems which he published shortly afterward won some distinction. Subsequently, he became an advocate in his native city, but continued faithful to the muses. In 1830, he went to Madrid, where he published anonymously his *Poesías del Solitario* (1833). He also wrote several articles on Andalusian manners for the *Cartas Españolas*, the only literary journal at that period in Spain. In 1836 he was appointed civil gov. of Logroño, but an accident compelled his return to Madrid, where he applied himself to collecting MSS. of the old national literature, to be the basis

CALDERON DE LA BARCA.

of a great critical edition of the *Cancioneros* and *Romanceros*. C. wrote likewise a fine novel, *Cristianos y Moriscos*. To the literature of the Spanish Moors he paid great attention. His *Escenas Andaluces* (1847) are a series of lively sketches of Andalusian life. At his death he left a work on the *Expediciones y Aventuras de los Españoles en África*. The Spanish government purchased his valuable library.

CALDERON (DON PEDRO) DE LA BARCA HENAO Y RIANO, *kál'der-on*, Sp. *kál dī-rōn' dū lá bar'há ā-ná'o ē rē-á'no*: Spanish poet: 1601-1681, May 25; b. Madrid: received his early education in the Jesuits' College at Madrid. Afterward, at Salamanca, he studied chiefly history, philosophy, and law. His poetical genius was precocious. Before he was 14 years old he had written a drama, *El Carro del Cielo* (The Celestial Chariot). In early life he gained, by his poetry, and by his fertile invention of decorations, etc., for festive occasions, the patronage of several distinguished persons, and, on leaving Salamanca, 1619, was well received by the courtiers at Madrid. Love of military adventure induced him to enter the army, 1625; and, after serving with distinction in Milan and the Netherlands, he was recalled to the court of Philip IV., a prince fond of theatrical amusements, by whom he was employed to superintend various court-amusements, and especially to invent dramas for the Royal Theatre. In the following year C. was made knight of the order of San Jago, and took part in the campaign in Catalonia. Peace brought him back to poetry. The king gave him a pension, contrived to let him cultivate uninterruptedly his fertile dramatic genius, and spared no cost in securing for his plays a splendid initiation on the stage. In 1651, C. received from the head of the order of San Jago permission to enter the priesthood, and, in 1653, was appointed to the chaplaincy of the arch-episcopal church of Toledo; but as this post removed him too far from the court, he was appointed chaplain in the Royal Chapel at Madrid, 1663, and received, with other favors, a pension charged on the revenue of Sicily. In the same year he was appointed a priest in the brotherhood of San Pedro, and, shortly before his death, was elected by his brethren as their *caplan mayor*. At his death he left his considerable property to the fraternity of San Pedro, by whom a splendid monument to this memory was raised in the church of San Salvador at Madrid. Fame and pecuniary prosperity had accompanied his career. The chief cities of Spain—such as Toledo, Seville, and Granada—had paid him, from time to time, large sums of money for writing their *Autos Sacramentales*, or *Corpus Christi* pieces. These compositions in which C. excelled all his predecessors, he esteemed more highly than all his other works, though in many respects the latter show the author's genius quite as remarkably.

Spain numbers C. among its greatest poets, and criticism must allow that many of the defects in his works are to be ascribed to circumstances, and the times in which he lived, rather than to the native tendencies of his genius. He is characterized by brilliancy of fancy, elegance of versifica-

tion, and a richness of detail, which from its very abundance often becomes tedious. His collected dramatic works—including many pieces of intrigue, heroic comedies, and historical plays, of which some deserve the title of tragedy—amount to 128. Among his romantic tragedies, the *Constant Prince* (*El Principe Constante*) holds the first rank. Besides these, he wrote 95 *Autos Sacramentales*; 200 *Loas* (preludes); and 100 *Saynetes* (divertissements). His last play, *Hado y Divisa*, was written in his 80th year. His shorter poems have perished; but his dramas have held their place on the stage better than those of Lope de Vega himself. The most complete edition of his dramas appeared at Madrid (9 vols., 1683–89); another was published by Apuntes (10 vols., Madrid, 1760–63). Goethe and Schlegel have made him popular in Germany, but in Britain he is not well known, and in France not cared for.

CALDERWOOD, *kawl'dër-wûd*, DAVID: 1575–1651; descended of a good family: Scottish divine and ecclesiastical historian. About 1604 he was settled as Presb. minister of Crailing, Roxburghshire. Opposed to the designs of James VI. for the establishment of Episcopacy in Scotland, on that monarch's visit to his native country 1617, he and other ministers signed a protest against a bill, then before the Scots parliament, for granting the power of framing new laws for the church to an ecclesiastical council appointed by the king, and in consequence he was summoned before the High Commission of St. Andrews. Refusing to submit, he was committed to prison for contumacy, and then banished from the kingdom. He retired to Holland, and in 1623 published there his celebrated controversial work, entitled *Altare Damascenum*, etc., in which he rigorously examined the origin and authority of Episcopacy. In 1622, a pretended recantation of his protest was published at London by a venal writer, Patrick Scott. While on the continent, C. was known by the quaint appellation of Edwardus Didoclavius, being an anagram on his name Latinized. After King James's death 1625, he returned to Scotland, and for some years was engaged collecting all the memorials relating to the ecclesiastical affairs of Scotland, from the beginning of the Reformation there to the death of James VI. In 1638, he became minister of Pencaitland, near Edinburgh; and in 1643 was appointed one of the committee for drawing up the *Directory for Public Worship in Scotland*. He died at Jedburgh. From the original MS. of his *History of the Kirk of Scotland*, preserved in the British Museum, an edition was printed for the Wodrow Society, 8 vols., 8vo. (Edin. 1842–45), edited by the Rev. Thomas Thomson.

CALDIERO, *kâl-de-â'ro* (ancient *Caldarium*): decayed town of n. Italy, about nine m. e. of Verona. Its thermal springs were in repute as early as the 1st c. of the Christian era, and continued popular until the commencement of the 16th c., after which they gradually became neglected and are now little visited. The Austrians repulsed the French here 1796.

CALDRON—CALEDONIA.

CALDRON, *n.* *kawld' drŏn* [L. *caldārĭŭm*, a vessel for supplying hot water to a bath—from *caldus* for *calĭdus*, hot: F. *chaudron*: OF. *chaldron*: Sp. *calderon*]: a large kettle or boiler. **CALDERA**, *n.* *kăł-dĕ' ră*, a Spanish term for one of the deep caldron-like cavities which occur on the summits of extinct volcanoes.

CALDWELL, *kawld' wel*: cap. of Warren co., N. Y., at the head of Lake George, 52 m. n. of Albany. It is a place of summer resort; steamboats ply from it along the lake. The scenery is beautiful. Here are the ruins of Forts George and William Henry, celebrated in the French war and in that of the revolution. The hotel built on the side of Fort William Henry is one of the largest in the United States. Pop. of C. (1880) 1,223; (1890) 1,377.

CALDWELL, *kawld' wel*, CHARLES H. B., U. S. N.: 1828, June 11—1877, Nov. 30; b. in Hingham, Mass. He entered the navy 1838, became lieut. 1852, commander 1862, and cap. 1867. In 1858 he defeated a cannibal tribe at Wega, one of the Fejee Islands, and burned their town. 1862, Apr. 24, he took part in bombarding Forts Jackson and St. Philip, but his vessel, the *Itasca*, was disabled by a shot entering the boiler. C. also had a share in the actions with the Grand Gulf batteries on the Mississippi, 1862, and in the operations at Port Hudson, 1863.

CALDWELL, *kawld' wel*, JAMES: 1734, Apr.—1781, Nov. 24; b. Charlotte co., Va., of Scotch-Irish parentage: patriot. He graduated at the College of N. J., 1759, and was ordained Presb. pastor at Elizabethtown, N. J., 1762. He ardently espoused the revolutionary cause, did much to rouse the people, served as chaplain and afterward as commissary of N. J. troops, and became noted as the 'soldier parson.' The bell of his church always gave warning of incursions of the enemy. At Springfield he is said to have brought an armful of hymn-books from the pews and distributed them to the soldiers with the words, 'Give 'em Watts, boys.' His zeal provoked the special hatred of the tories; in 1780 his church and house were burned, and his wife, who had been sent for safety to Connecticut Farms, shot from without while at prayer with her children. C. was killed at Elizabethtown Point by James Morgan, a sentinel, who was said to have been bribed to do the deed. The murderer was convicted, and hanged 1782, Jan. 29. A marble monument in commemoration of C. and his wife was dedicated at Elizabethtown on the 64th anniversary of his death.

CALDWELL, JOSEPH, D.D.: 1773, Apr. 21—1835, Jan. 24; b. Leamington, N. J. He graduated at the College of N. J. 1791, was called 1796 to the Univ. of N. C., then in its infancy, as presiding prof. with charge of mathematics; and became its pres. 1804, taking the chair of moral philosophy. He went to Europe 1824 to procure books and apparatus. C. published a treatise on geom., 1822, and *Letters of Carlton* 1825. He died at Chapel Hill, North Carolina.

CALEDONIA, *kăł-e-dŏ'nĭ-a*: poetical name sometimes applied to Scotland; being a resumption of that given by

CALEDONIA—CALEDONIAN CANAL.

the Romans to the country n. of the Wall of Antoninus, whose course was between the Firths of Forth and Clyde. Among the chief tribes of this region were the Caledonii, whence the whole country has been called Caledonia. Tacitus speaks of the Caledonians as having red hair, large limbs; being naked and barefooted; living in tents without cities; supporting themselves by pasturing cattle, by the chase, and by certain ferries; addicted to predatory warfare; and fighting in chariots with shields, short spears, and daggers. They are supposed to have been of Gaelic or Celtic origin, and to have painted their bodies, whence the name Picti or Picts, by which, according to many writers, they were afterward known. Agricola was the first Roman general to come in contact with the Caledonians. In A.D. 84 he defeated them, now united to repel a common enemy, under their chief Galgacus, at the Mons Graupius (or Graupius), the site of which has not been determined. The Romans overran the n.e. of Scotland as far as the Moray Firth, and formed many encampments (of which remains are still seen), but they never reduced the country to a Roman province. Roman coins and military relics have been found in connection with these camps. The name of Caledonii dissappears about the beginning of the 4th c., when the inhabitants of Scotland begin to be spoken of as Scots (q.v.) and Picts (q.v.).

CALEDONIA, NEW: see NEW CALEDONIA.

CALEDONIAN, a. *kāl'ê-dō'nî-ăn* [*Caledōniā*, an ancient name of Scotland]: Scotch: N. a Scotchman. CALEDONITE, n. *kă-lèd'ō-nīt*, the cupreous sulphato-carbonate of lead, found at the Leadhills in Scotland.

CALEDONIAN CANAL: chain of natural lakes united by artificial canals, crossing the n. of Scotland in a straight line from n.e. to s.w. from the North Sea to the Atlantic, through Glenmore, or the Great Glen of Albin, in Inverness-shire, and touching Argyleshire at the s. end. The sea and freshwater lochs in this line are Beauly, Ness, Oich, Lochy, Eil, and Linnhe. The canal was formed to avoid the dangerous and tedious navigation of vessels, especially of coasters, round by the Pentland Firth, Cape Wrath, and the Hebrides; the distance between Kinnaird's Head and the sound of Mull by this route being 500 m., but by the canal only 250, with an average saving of 9½ days for sailing vessels. The C. C. begins in the Beauly Firth, near Inverness, whence a cut of 7 m. joins Loch Ness, which is 24 m. long, 1¼ m. wide. A cut of 6 m. joins Loch Ness and Loch Oich, which is 3½ m. long, ½ m. wide. Another cut of 2 m. joins Loch Oich and Loch Lochy, which is 10 m. long, 1 m. wide; and a fourth cut of 8 m. joins Loch Eil at the village of Corpach, 2 m. n. of Fort William. This ship-communication is 60½ m. long, 37½ m. being through natural lochs or lakes, and 23 m. by artificial cuts. Each cut is 120 ft. broad at surface, and 50 at bottom, and 17 deep. The highest part is Loch Oich, 94 ft. above the sea. There are in all 28 locks, each 170 to 180 ft. long, and 40 wide, with a rise or lift of water of 8 ft. Eight of the locks,

CALEFACIENT—CALEMBOUR.

called Neptune's Staircase, occur in succession near the w. end of the canal. Some large mountain streams between Lochs Eil and Lochy are conducted in huge culverts under the canal; and by a new cut the Lochy water is turned into the Spean. The practicability of this great work was shown first by a survey under government in 1773 by the celebrated James Watt; but it was not till 1803 that it was begun under Mr. Telford. The whole line was opened for ships 1823. After three years of repair, it was reopened 1847. Ships of 500 to 600 tons, fully laden, can pass through it. The canal and tonnage rates for sailing vessels are each a farthing per mile per ton, and a half of this for vessels under 125 tons. Steamers pay 2s. a ton. Of £1,368,203 expended on this canal (1803-56) £1,242,387 were voted by parliament, and £90,748 were from canal dues. Heavy gales and rains 1848, Dec., and 1849, Jan., did much damage to the canal, which was repaired by a government grant of £10,000. For the year ending 1881, April, the total income of the canal was £7,498, whereas the expenditure amounted to £7,726—a state of accounts unusually favorable. There is regular steam communication by the canal between Glasgow and Inverness. The scenery is wild and romantic on both sides of the canal, and there are many other objects of interest to the tourist, such as Fort William, Ben Nevis, Inverlochy Castle, Tor Castle, the ancient seat of Cameron of Locheil, Glen Spean, Glen Roy, with its Parallel Roads, Fort Augustus, the Fall of Foyers, and Inverness.

CALEFACIENT, a. *kāl'î-fā'shĭ-ěnt* [L. *calĕō*, I am warm; *făciō*, I make]: warming; giving heat: N. a substance which excites heat at the part where applied. **CAL'EFAC'TION**, n. *-făk'shŭn*, the operation of making warm; state of being warm. **CAL'EFY**, v. *-fĭ*. to become hot; to be heated. **CAL'EFYING**, imp. **CAL'EFIED**, pp. *-fĭd*.

CALEMBOUR, or **CALEMBOURG**, *kāl'em-bôr*: French name for a pun (q.v.).

CALENDAR.

CALENDAR, n. *kāl'ën-dër* [L. *calendāriūm*, an account-book; It. *calendario*—from L. *calendæ*, the first day of the Roman month—from *calo*, I proclaim]: an almanac; a register of the days, weeks, months, festivals, holidays, etc., in the year; an orderly arrangement or enumeration, as of state papers; a list of prisoners for trial: V. to register. **CAL'ENDARING**, imp.: N. the act of arranging old documents and state papers, etc., for easy consultation and comparison. **CAL'ENDARED**, pp. *-dërd*. **CALEN'DRICAL**, a. *-drī kāl*, pertaining to. **CALENDAR MONTH**, a solar month as it stands in the calendar or almanac. **CALENDS**, n. plu. *kāl'ëndz*, first day of each month among the Romans.

CALENDAR [from **CALENDS**, q.v.]: adjustment of the months and other divisions of the civil year to the natural solar year. The phases or changes of the moon supplied an early, as it was a natural and very obvious, mode of dividing and reckoning time; hence the division into months (q.v.: see also **WEEK**) of 29 or 30 days was one of the earliest and most universal. But it would soon be observed that, for many purposes, the changes of the seasons were more serviceable as marks of division; and thus arose the division into years (q.v.), determined by the motions of the sun. It was soon, however, discovered that the year, or larger division, did not contain an exact number of the smaller divisions or months, and that an accommodation was necessary; and various not very dissimilar expedients were employed for an adjustment that should correct the error. The ancient Egyptians had a year determined by the changes of the seasons, without reference to the changes of the moon, and containing 365 days, divided into twelve months of 30 days each, with five supplementary days at the end of the year. The Jewish year consisted, in the earliest periods, as it still does, of twelve lunar months, a thirteenth being from time to time introduced, to accommodate it to the sun and seasons; this was also the case with the ancient Syrians, Macedonians, etc. The Jewish months have alternately 29 and 30 days; and in a cycle of 19 years there are seven years having the intercalary month, some of these years having also one, and some two days more than others have, so that the length of the year varies from 353 to 385 days.—The Greeks in the most ancient periods, reckoned according to real lunar months, twelve making a year; and about B.C. 594 Solon introduced in Athens the mode of reckoning alternately 30 and 29 days to the month, accommodating this civil year of 354 days to the solar year, by occasional introduction of an intercalary month. A change was afterward made, by which three times in eight years a month of 30 days was intercalated, making the average length of the year 365½ days. See **METONIC CYCLE**.

The Romans are said to have had originally a year of 10 months; but in the times of their kings, they adopted a lunar year of 355 days, divided into 12 months, with an occasional intercalary month. Through the ignorance of the priests, who had the charge of this matter, the utmost confusion gradually arose, which Julius Cæsar remedied, B.C. 46, by the introduction of the **JULIAN CALENDAR**,

CALENDAR.

according to which the year has ordinarily 365 days, and every fourth year is a leap-year of 366 days—the length of the year being thus assumed as $365\frac{1}{4}$ days, while it is in reality 365 days, 5 hours, 48 minutes, and 50 seconds; or 11 minutes, 10 seconds less than the $365\frac{1}{4}$ days. Cæsar gave to the months the number of days which they still have.

So comparatively perfect was the Julian style of reckoning time that it prevailed generally among Christian nations, and remained undisturbed till the renewed accumulation of the remaining annual error of 11 minutes and 10 seconds had amounted, in 1582 years after the birth of Christ, to ten complete days, the vernal equinox falling on Mar. 11 instead of Mar. 21, as it did at the time of the Council of Nice, 325 years after the birth of Christ. This shifting of days had caused great disturbances, by unfixing the times of the celebration of Easter, and hence of all the other movable feasts of the church. And accordingly, Pope Gregory XIII., after deep study and calculation, ordained that ten days should be deducted from the year 1582, by calling the day which, according to the old calendar, would have been 1582, Oct. 5, 1582, Oct. 15, instead; and in order that the displacement might not recur, it was further ordained that every hundredth year (1800, 1900, 2100, etc.) should not be counted a leap-year, excepting every fourth hundredth, beginning with 2000. In this way the difference between the civil and the natural year will not amount to a day in 5,000 years. In Spain, Portugal, and part of Italy, the pope was exactly obeyed. In France the change took place in the same year, by reckoning Dec. 10 as Dec. 20. In the Low Countries, the change was from Dec. 15 to Dec. 25; but it was resisted by the Protestant part of the community until 1700. The Rom. Catholic nations in general adopted the *style* ordained by their sovereign pontiff; but the Protestants were then too much inflamed against the Latin church in all its relations, to receive even a purely scientific improvement from such hands. The Lutherans of Germany, Switzerland, and, as already mentioned, of the Low Countries, at length gave way in 1700, when it had become necessary to omit *eleven* instead of ten days. Scotland adopted the new reckoning in 1600. In England a bill to this effect was brought before the parliament, 1585, but did not get beyond a second reading in the house of lords; and it was not till 1751, after great inconvenience had been experienced from the difference of the reckoning for nearly two centuries, that an act was passed (24 Geo. II., 1751) for equallizing the style in Great Britain and Ireland with that used in other countries of Europe. It was then enacted that eleven days should be omitted *after* 1752, Sep. 2, so that the ensuing day should be Sep. 14. Russia, Greece, Roumania, and the minor countries belonging to the Greek confession, still adhere to the *old style*; an adherence which renders it necessary, when a letter is thence addressed to a person in another

CALENDAR OF PRISONERS—CALENDER.

country, that the date should be given thus:—April $\frac{1}{13}$ or $\frac{\text{June } 27}{\text{July } 9}$; for it will be observed, the year 1800, not being reckoned in the Gregorian calendar as a leap-year, has interjected another (or twelfth) day between old and new style.

The C. of the French Republic was adopted in consequence of a decree of the national convention, 1793. The midnight preceding the autumnal equinox of 1792 was fixed upon as the new epoch, from which the years were to be reckoned as the Year One, the Year Two, etc. The year was divided into 12 months, each of 30 days, to which new names were given, as *Vendémiaire* (vintage month), *Brumaire* (foggy month), etc.; and instead of weeks, each month was divided into periods of 10 days, called *Primidi*, *Duodi*, *Tridi*, etc. Five *complementary* days were added at the end of each year, which were the *Fête du Génie*, *Fête du Travail*, etc. By Napoleon's command, this new system was abolished, and the use of the Gregorian C. resumed, 1806, Jan. 1.

CALENDAR OF PRISONERS, in the practice of the criminal law in England: technical name of the list of all prisoners' names in the custody of the sheriff of each county, prepared for the assizes.

CALENDER, n. *kāl'ën-dër* [so named from the founder]: in the *East*, one of a sect of dervishes.

CALENDER, n. *kāl'ën-dër* [F. *calandre*, a calender, a mangle—from mid. L. *calen'dra*, an instrument for smoothing cloth—from L. *cyl'indrus*; Gr. *kul'indros*, a cylinder]: a press, consisting of heated rollers, between which cloths are passed to finish them off: V. to press between heated rollers. CAL'ENDERING, imp.: N. the process by which a thing is pressed and smoothed. CAL'ENDERED, pp. -*dërd*. CAL'ENDRER, n. -*drër*, or CAL'ENDER, n. -*dër*, one who calenders cloths.

The familiar domestic processes of starching and ironing afford the simplest illustrations of the object and result of calendering. The domestic mangle effects the same object as the flat-iron, and is a near approach in construction to the calendering engines of the manufacturer, no traversing-box of stones being used in the new patent mangles.

The cylindrical calendering machine is said to have been introduced into England by the Huguenots, driven there by persecution. The cylinders were originally of wood, but the liability to warping is a strong objection to these.

The modern calender usually consists of four, five, or six cylinders or 'bowls' set vertically in a strong iron frame, with suitable driving gear, and furnished with weights suspended over a pulley to produce the required pressure. This sometimes amounts to, or even exceeds, 20 tons, including the weight of the rollers. In a five-roller machine, the arrangement is this: The centre roller is of iron or copper, made hollow for the admission

CALENDS.

of steam or a red-hot heater, the one immediately above and that directly below it are of paper; and the remaining two, one at the top and the other at the bottom, are of cast-iron. At least one of the rollers is always of paper, as it has more elasticity than metal, and is not liable to warp, like wood. It consists of sheets of brown paper or pasteboard, densely packed and compressed on an iron axis. The edges of these form the surface of the roller, which is turned and polished, an operation of some difficulty.

Before the final rolling in the calendering machine, the fabric is first lightly smoothed by passing over warm cylinders. Cotton goods are starched with a starch prepared from flour, and the starch is sometimes thickened with plaster of Paris, porcelain clay, or a mixture of these, to give a fictitious appearance of stoutness, which of course vanishes when the article is washed. For ordinary calendering the fabric is then simply passed between plain cylinders, which produces the desired effect by flattening the otherwise round threads. When, by means of a hot cylinder, with a pattern raised upon it, the amount of this flattening is unequal on different parts of the cloth, the beautiful effect known as 'watering' is the result. *Glazing* is produced by combined rubbing and pressure, the rollers, one of which is heated, being made to move with different velocities, so that one side of the fabric is rubbed as well as pressed by the roller whose surface moves with the greater rapidity. Before the invention of these rubbing cylinders, glazing was effected by rubbing the surface of the fabric with a polished flint. Machines similar in construction to the one above described, but with all the rollers of iron, and also called calenders, are used for rolling india-rubber into sheets for coats, shoes, etc.

CALENDS, *kāl'ēndz* [see CALENDAR]: One of the divisions of the month, among the Romans. They used a threefold division of the month into *Calends*, *Nones*, and *Ides*. The C. always fell upon the 1st of the month; the Nones in March, May, July, and October, on the 7th; and the Ides on the 15th; and in the remaining months the Nones on the 5th, and the Ides on the 13th. The C. were so named because it was an old custom of the College of Priests on the first of the month to *call* (or assemble) the people together to inform them of the festivals and sacred days to be observed during the month; the Nones received their name from being the *ninth* day before the Ides, reckoning inclusively; and the Ides from an obsolete verb, signifying to divide, because they nearly halved the month. This threefold division also determined the reckoning of the days, which were not distinguished by the ordinal numbers first, second, third, etc., but as follows: Those between the C. and the Nones were termed *the days before the Nones*; those between the Nones and the Ides, *the days before the Ides*; and the remainder, *the days before the C.* of the next month. Thus, the Ides of January, happening on the 13th of that month, the next day would not be

CALENDULA—CALF OF MAN.

termed by a Latin writer the 14th, but *the 19th before the C. of February*, reckoning inclusively, i.e., reckoning both Jan. 14 and Feb. 1, and so on to the last, which was termed *pridie Calendas*.

Ad Calendas Græcas, a Roman proverbial saying, practically equivalent to 'never.' The Roman C. were often appointed as days for the payment of rent, interest, etc.; but as the Greeks had no C., a postponement of payment *ad Calendas Græcas* simply meant a refusal to pay altogether. It is said that the Emperor Augustus frequently used the phrase, which afterward became a proverb.

CALENDULA, n. *kă-lĕn' dŭ-lă* [L. *calendula*, the first day of the Roman month]: a genus of plants including the common marigold, so named as species may be found in flower every month; the *C. officinālis*, ord. *Compōs'itæ*. CALENDULINE, n. *-lĕn*, a gummy extract obtained from the marigold used in medicine.

CALENTURE, n., *kăl'ĕn-tŭr* [Sp. *calentura*, a fever—from *calentar*, to heat—from L. *calĕrĕ*, to be hot]: a violent fever of hot climates, chiefly affecting natives of temperate climates—one of its symptoms in the delirium, while on a voyage, is to imagine the sea to be green fields. The descriptions of the disease seem rather fanciful and contradictory, and the term is nearly obsolete. See *Dictionnaire des Sciences Médicales*.

CALENUS, *ka-lĕ'nŭs*, QUINTUS FUFIVS: Roman consul: d. abt. B.C. 40. He served Cæsar as legate in Gaul, B.C. 51, was his strong partisan in the civil war, and was elected consul through his friendship, B.C. 47. After Cæsar's death C. commanded an army for Anthony in n. Italy, where he died.

CALENZIO, *kă-lĕn'ze-o*, ELISEO: poet: b. Apulia; d. 1503. He was esteemed among the Latin poets of his time, became preceptor to Prince Frederick, son of Ferdinand II. of Naples, and was the author of many epigrams, elegies, and epistles.

CALEPINO, *kă-lŭ-pĕ'no*, AMBROGIO: philologist: 1435–1511; b. Bergamo, Italy. He spent his life in the composition of a polyglot dictionary; published first at Reggio, 1502, and after being enlarged by Passerat and others, at Basel, 1590, and Padua 1772.

CALESCENCE, n. *kă-lĕs'sĕns* [L. *calĕscens*, growing or becoming warm]: a growing warm.

CALF, n. *kăf*, CALVES, plu. *kăvz* [AS. *cealf*: Ger. *kalb*: Dan. *kalv*: comp. Gael. *dhamb* = *căff*, with *c* guttural]: the young of the cow kind; a stupid or cowardly person; among sailors, a mass of ice detached from an iceberg. CALVE, v. *kăv*, to bring forth a calf, as a cow. CALV'ING, imp. CALVED, pp. *kăvd*. CALF'ISH, a. *-ĭsh*, stupid. CALF-SKIN, the skin of a calf dressed or made into leather. IN CALF, said of cows when with young.

CALF OF MAN [Gael. *calbh*, a headland]: the headland or cape of the Isle of Man, being a small island on its s.w. coast

CALF OF THE LEG—CALIANO

CALF OF THE LEG [Gael. *calp* and *calpa*: Icel. *kalfi*, the calf of the leg, the primary meaning being a lump]: the thick, fleshy part of the leg behind. **CALVES OF THE LIPS**, in *Scrip.*, the offering of the lips in praise and thanksgiving, figuratively as if the offering of a calf or bullock.

CALHOUN, *kă'l-hôn'*, **JOHN CALDWELL**: statesman: 1782, Mar. 18—1850, Mar. 31; b. Abbeville, S. C.; descended from an Irish family who founded the Calhouns' Settlement in S. C. Having gained distinction at the bar, he was sent to congress 1811, where he soon made himself the leader of the war-party against England. Author of the tariff of 1816, so favorable to his native state, he was named minister of war by President Monroe, 1817, and reduced the confused state of affairs in his department to order, and made a great reduction in the expenditure of the army without sacrificing its efficiency.

This early part of C.'s career was marked by broad and patriotic views; in after years he became a leading advocate of distinctively southern interests, though doubtless conceiving of these as involving the benefit of the whole country. The tariff of 1828 not being very favorable to the southern states, C. still adhered to the government, hoping that the president, Jackson, would veto the measure; but as this hope was disappointed, C. went to South Carolina, and there (1829) carried in the legislature the notorious resolution, 'that any state in the Union might annul an act of the federal government.' To this decision, Virginia, Georgia, and Alabama gave in their adhesion, and threatened a dissolution of the Union. President Jackson promptly used energetic measures to make this resolution of no effect. C. lost popularity, and, despairing of reaching the presidency, resigned his vice-presidency, but soon afterward was elected to the senate. In 1838 he delivered his famous speech on slavery, and continued to agitate on behalf of the slave-holding interest and for a dissolution of the Union, both with voice and pen until his death at Washington. In his private character, C. was blameless; but in his career as a statesman he is understood to have implanted in the minds of his partisans those principles which culminated in the great war for the dissolution of the Union. He had a peculiar acuteness of intellect, and his convictions were positive. During many years, he had been employed in writing his work on *The Philosophy of Government*, in which he vindicates the doctrine of state sovereignty, and which, with other works, was posthumously published.

CALHOUN, **SIMEON HOWARD**, D.D.: 1804, Aug. 15—1876, Dec. 14; b. Boston. He graduated at Williams College, 1829; after studying law, was a tutor at Williams. In 1837 he went to the Levant as agent for the Amer. Bible Soc.; in 1844, became a missionary in Syria, under the Amer. Board, laboring devotedly for 30 years in the seminary at Abeih, on Lebanon. He died at Buffalo, N. Y.

CALIANO, *kâ-le-â'no*: small town of the Austrian Tyrol, on the left bank of the Adige, about 9 m. s. of

CALIBRE—CALICE.

Trent. It figures in history as the place where the Austrian archduke, Sigismund, won a signal victory over the Venetians 1487. Being a place of considerable military importance, it was contested also in the campaigns of 1797 and 1809.

CALIBRE, or CALIBER, n. *kāl'ī-bēr* [Sp. *calibre*, bore, diameter, quality—from Ar. *kalib*, form, mold: F. *calibre*—from It. *calibro*]: the diameter of a body; the bore of a gun; capacity of the mind; the extent of mental or intellectual qualities possessed by any one. CALIBERED, pp. a. *-ī-berd*, measured with compasses called *calipers*. CALIBRATE, v. *kāl'ī-brāt*, to ascertain the calibre of; to determine and allow for irregularities of bore of a thermometer, and the like. CAL'IBRA'TION, n. *-brā'shūn*, the act or process of ascertaining the calibre of.

CAL'IBRE, or CAL'IBER: technical name for the diameter of the bore of a firearm, whether a piece of ordnance or a small-arm. The ordnance from which solid shot are projected are generally denoted by the weight of each shot, as 24-pounder, 68-pounder, etc.; but mortars, and such guns as project shell or hollow shot, are usually denoted by the C, such as 13-inch mortar, 10-inch shell-gun, etc. For the C. of the chief kinds of fire-arm, see the proper titles. Of late years the C. of ordnance is much larger than formerly.

CALICE, n. *kāl'īs ē* or *kāl'īs* [L. *calix*, a cup; *calice*, in or with a cup]: the little cup in which the polyp of a coralligenous zoophyte is contained.

CALICO.

CALICO, n. *kal'î-kô* [from *Calicut* in E. Indies: F. *calicot*]: unprinted cotton cloth. CALICO-PRINTING, the art of dyeing cotton cloth, or covering cotton cloth with figures of various colors. CALICO-PRINTER, one who.

Calico-printing appears to have been practiced first at *Calicut* in India—hence the term *calico*; and the *pallam-poor*s, or large cotton chintz counterpanes, which have been manufactured in the East Indies for centuries, are evidence of the successful practice of the art in that country. From the East Indies the art spread to Asia Minor and the Levant, thence to Augsburg in Bavaria; whence, at the beginning of the 18th c., it spread to Alsace in France, to Switzerland, and ultimately to England and Scotland. The term is applicable strictly to the production of colored patterns on cotton cloth or calico; but as now employed, it includes all the processes followed in the formation of a colored pattern on cotton, linen, worsted, and silk goods, as also mixtures of two or more of these, such as the fabric called *de laine*, of cotton and worsted.

The first operation connected with the printing of cloth is the removal of the surface-hairs or minute threads which communicate a fibrous down or nap to the surface of the cloth, and if allowed to remain, would interfere with the uniform application of the colors. The surface down is disposed of by the process of singeing, during which the cloth is drawn over a red-hot iron or copper bar or plate, or through a series of gas jets. The apparatus generally used for *hot-plate singeing* consists of a furnace surmounted by a metal plate, which is sometimes ridged on the surface. The cloth having previously been joined at the ends, to make a long length, and been placed on a winch-roller, is first brought in contact with roller brushes, which raise the nap on the cloth, then passes over the white-hot metal cylindrical bar; and is wound on to a second winch-roller. The process is repeated twice on the face of the cloth, being the surface to be printed on, and once on the back. *Gas-singeing* is accomplished by drawing the cloth through brushes, and then over a horizontal pipe, perforated with rows of small holes, or slit from end to end, so that the gas issuing therefrom burns as a narrow sheet of flame. The cloth is not only allowed to come in contact with the burning gas, but the flame is transmitted through the cloth, and a suction-apparatus is often placed immediately above, so as to draw the flame through more effectually. When well singed, the cloth undergoes the process of bleaching (q.v.), and is thereafter calendered: see CAL-ENDERING.

There are several modes of applying the colors to cloth, and these are respectively named—1. The Madder style; 2. The Padding style; 3. Topical style; 4. Resist or Reserve style; 5. Discharge style; and 6. China blue or Pottery style. These various processes are at one in being intended to fix upon the cloth the different colors; but they differ from each other more or less in the several steps through which the cloth is passed, though occasion-

ally there is little or no difference; and at times, the cloth is treated by one method, and subsequently by another.

The *madder style* is that in which a certain fixing agent or mordant is printed on the cloth, which is then introduced into the coloring matter in a dye-vat, when the mordant, having an attraction alike for the fibre of the cloth and for the coloring matter, acts the part of glue or paste, and cements the color to the cloth. Originally, madder was the only coloring substance employed in this style; but in recent years by far the greater number of dye-stuffs, vegetable and animal, including cochineal, log-wood, etc., are attached to cloth in this manner. The fixing agents or mordants generally used are different strengths of *red liquor* (acetate of alumina), *iron liquor* (acetate of iron), and mixtures of these. These are thickened with wheat-starch, potato-flour, roasted starch or dextrine, and gum-arabic, so that the mordant may not run when it is placed on the cloth by the pattern-block or by the printing-machine. After the mordant has been imprinted on the cloth, the latter is hung in a warm, airy, room, where it can easily dry, yet where the atmosphere is moist. The result is, that the mordant is decomposed, the acetic acid is evolved, and the alumina or iron is left attached to the fibre of the cloth in the state of an insoluble sub-salt, which cannot be dissolved by water. As some of the mordant is still left in its original soluble condition, it is necessary to wash the cloth free from this, else, during the dyeing operation, the soluble part of the mordant would run on to those parts of the cloth not intended to be colored, and thus produce a blotted appearance. To obviate this, the cloth, having undergone the process of *drying and ageing*, is then introduced into a vat containing water, through which is diffused some cow-dung, dung substitute (a preparation of bone ash, sulphuric acid, carbonate of soda, and glue), or bran. The result of this process of *dunging* is the removal of the soluble part of the mordant, as also the starch or thickening agent, leaving the decomposed or insoluble mordant adhering to the fibre. The terms *dung-fixing*, *substitute-fixing*, and *bran-fixing*, have reference to the employment of one or other of these agents at this stage of the operation. When the cloth has been well washed from the dunging, it is introduced into the vat or dye beck containing the coloring matter. The whole is heated by steam-pipes, and the cloth being placed on a sparred reel kept in motion, is repeatedly wound out of the vat, and returned thereto. The result is, that wherever the mordant adhered to the cloth, the coloring matter is attached thereto, and little or no trace of color adheres to the unmordanted parts. The last operation is the *clearing* or *brightening*, during which the colored cloth is introduced into warm baths of water containing soda, soap, or, for the more delicate tints, bran, and is thereafter acted on by weak acid solutions. The object is to clear the colors, and at the same time to confer upon them the property of resisting the fading action of the air and sun for a much longer

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time. The different shades of color which can be obtained from the same madder beck or vat, with different mordants, are very numerous, and include reds, lilacs, purples, chocolates, and blacks. Thus, when a weak solution of red liquor (acetate of alumina) is the mordant, a light red tint is procured; with a stronger aluminous mordant, a deep red is formed on the cloth; with a more or less dilute solution of iron liquor (acetate of iron), the cloth is colored lilac, violet, or purple; with a strong solution of iron liquor, black is obtained. Indeed, the same piece of cloth stamped in different places with the various strengths of aluminous and iron mordants, and mixtures of these, and immersed in the madder-bath, will be obtained dyed with all the shades mentioned; and in this manner, many of the beautiful variegated colored dresses and handkerchiefs are prepared for market.

The *padding style* is intended mainly for the impregnation of cloth, in whole or in part, with mineral coloring substances. When the cloth is to be entirely colored, it is immersed wholly in a vat containing the mordant. When the color is to appear as a pattern on the fabric, the mordant is applied by a pattern block, or by the printing-machine. In either case, the cloth is thereafter thoroughly dried, and washed in various solutions, and then introduced into a vat containing the substance to form the color. Thus, if a piece of cloth is to be entirely impregnated with *chrome yellow*, it is first treated or *padded* in a solution of 8 parts of bichromate of potash ($\text{KO}, 2\text{CrO}_3$) to a gallon of water dried, and then placed in a vat containing a solution of 6 or 8 ounces of acetate or nitrate of lead (PbOA , or PbONO_5) to the gallon of water. The result is that the chromate of lead (PbOCrO_3) is formed in the tissue of the cloth; and when the latter is washed and dried, the yellow color still adheres to the cloth firm and fast. To print a yellow pattern on cloth, 7 to 9 ounces of acetate of lead, and the same quantity of nitrate of lead, are dissolved in a gallon of water, thickened with starch, and placed upon the cloth according to pattern. After drying, the cloth is first immersed in water containing a little carbonate of soda, and ultimately in a solution of bichromate of potash, when the pattern becomes fixed in bright yellow, insoluble in water. To produce *Prussian blue* on cloth, it is treated with acetate and sulphate of iron, dried, washed with warm chalk-water, and immersed in a very weak solution of yellow prussiate of potash. A pattern in Prussian blue is produced by printing a pattern in the cloth with the iron solutions thickened with gum, and thereafter proceeding as above. Chrome green is produced in a similar way, by using sulphate and acetate of copper, thickened with glue, and thereafter arsenious acid with potash; and so for other colors, such as iron buff or chamois, manganese bronze, etc.

The *topical style* is the process whereby certain coloring matters insoluble in water, therefore not to be applied to cloth by the modes suggested under the madder

and padding styles, are treated at once with the mordant, and the mixture by one operation transferred by block, or otherwise, directly on the surface or *top* of the cloth; hence the term *topical*. Indigo, safflower, and arnotto are instances of such insoluble coloring substances; and when these and other dye-stuffs, such as logwood and Brazil wood, are treated with water, thickened with starch and nitro-muriate of tin (known as *spirits*) added, with occasionally a little of other salts, such as nitrate of copper, the result is the formation of *spirit-colors*, which can be printed on the surface of cloth, and have a degree of fixity. The permanency of these *spirit-colors*, however, is much increased, and the general appearance improved, by afterward subjecting the goods to the action of steam in a wooden chest or box, when the term *steam-colors* is applied.

The *resist style* is that in which certain materials are placed on the surface of cloth, to protect it from the adherence of the mordants, and, consequently, to keep that part of the cloth ~~from~~ being attacked by the coloring matter. These materials are termed resists, reserves, or resist pastes, and they are divisible into mechanical and chemical. The *mechanical resists* are such substances as fats, resins, oils, wax, and pipe-clay. A common resist for silk and woolen goods is a mixture of $2\frac{1}{2}$ of resin and 1 of suet; and it is principally in the color-printing of silk and woolen dresses and handkerchiefs that mechanical resists are used, though they are used occasionally for the printing of cottons. The chemical resists may act on the mordant or on the color. Thus, if it be desirable to remove the mordant, and thus leave certain parts of the cloth unable to attach color, the printing of a pattern with some acid substance on the cloth will form with the mordant a soluble salt, which can be readily removed by washing, while the parts not so acted on by acid are not dissolved away by the washing, and retain the full power in the color-vats to cause the adhesion of the color. For this purpose, where an iron or aluminous mordant has been employed, it is customary to print thereon in the requisite pattern, lemon-juice or lime-juice (containing citric acid), tartaric or oxalic acid, and bisulphate of potassa, or a mixture of two or more of these, thickened with pipe-clay, China-clay, gum-arabic, dextrine (British gum), gum-Senegal, or a mixture of these; occasionally, chloride of tin is employed. Sulphate of zinc, sulphate and acetate of copper, and the chloride of mercury are used to resist the adherence of indigo blue.

The *discharge style* comprehends the employment of similar materials to those used in the resist style, but *after* the cloth has been colored or dyed, and for the purpose of discharging the color, or bleaching the cloth at certain parts, according to pattern. The dischargers for organic coloring matters are chlorine and chromic acid. The chlorine is employed in the form of bleaching-powder (q.v.), and the cloth already dyed is printed with a solution of tartaric acid (or other acid), thickened with pipe-clay and gum, then dried, and passed through a solu-

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tion of bleaching-powder, when the decoloration occurs: see BLEACHING. The chlorine is applied also by placing a number of folds of colored cloth between perforated pattern plates, and subjecting the whole to great pressure; a solution of chlorine (obtained by adding an acid to a weak solution of bleaching-powder) is allowed to percolate down through the perforations of the plates, and through the cloth immediately underneath, so that only those spots are bleached, while the rest of the cloth is so highly compressed as to keep the liquid from coming in contact therewith. The well-known Turkey-red handkerchiefs are *patterned* in this way. The chromic acid is generally employed in discharging indigo color. The cloth, already entirely blue, is soaked or padded in bichromate of potash and then an acid discharger printed thereon; and wherever the acid discharger (tartaric, oxalic, citric, or hydrochloric acid) comes in contact with the blue cloth containing the bichromate of potash, chromic acid is liberated and destroys the color. Instead of acting upon the colored cloth, the discharger may be employed to carry off the mordant. Thus, cloth treated wholly with a mordant, and thereafter printed with a pattern in acid, has the mordant removed at those parts where the pattern block has placed the acid. Mineral colors also can be discharged in a similar way.

The *China blue* or *pottery style* is a modification of the topical style, where indigo is deposited on cloth in the insoluble state, and is thereafter manipulated so as to impregnate the cloth with the indigo more or less strongly, and thus produce different shades of blue.

The above descriptions of the various operations in calico-printing have special reference to cotton cloth; and though many steps of the manipulative processes apply equally well to linen, silk, worsted, and delaines (worsted and cotton), yet considerable modifications in mode of treatment and material employed are required in color-printing of all texture containing animal fibre, such as silk and wool. For the essential difference in the process with such fabrics from the processes already indicated, see SILK: WOOL. The different coloring matters used in C. are identical with those used in dyeing: see DYE-STUFFS: for the mode of compounding these into the various colors and shades, see DYEING.

CALICULA, n. *kă-lĭk'û-lă* [L. *calicŭlus*, a small cup—from *calicem*, a cup]: in bot., several bracts in union at the base of the calyx, sometimes larger than the calyx itself. CALICULATE, a. *kă-lĭk'û-lăt*, or CALIC'ULATED, a. *-lă-tĕd*, having the involucre at the base surrounded by a row of bracts like a calicula around a calyx.

CALICUT, *kă'lĭ-kăt*: seaport of the dist. of Malabar, which, though on the w. side of the peninsula of Hindustan, yet forms part of the presidency of Madras. In lat. 11° 15' n., and long. 75° 50' e., it is distant from Goa 300 m.; from Bombay, 566 m. It was the first spot in India visited by Vasco da Gama, being then the chief em-

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porium on the coast, with stately dwellings and magnificent pagodas. So populous and powerful was it, that it twice repulsed the Portuguese, slaying their commander in 1509, and expelling Albuquerque himself, after a transient success on his part, 1510. It stands near the mouth of a small river of the same name, appearing to have had at one time a moderately good haven. Gradually, however, this harbor has been filled up with sand; and now its anchorage is merely an open roadstead, at a distance, for large vessels, of two or three m. from land. Independently of this physical disadvantage, the ravages of war and the competition of superior localities contributed to the decay of C. Accordingly, in 1792, when it fell into the hands of the English, the city was little better than a ruin. Since then, it has made considerable progress. From C., *calico* is understood to have derived its name, just as *cambric* from Cambrai, in the n.e. of France.—Pop. (1881) 57,085; (1891) 65,700; (1901) 75,510.

CALID, a. *kāl'id* [L. *calidus*, warm]: hot; burning; ardent. CALIDITY, n. *kā-lid'ī-tī*.

CALIDIUS, *ka-lid'ī-ūs*, MARCUS: Roman orator: d. B.C. 48. He was contemporary with Cicero and urged his recall from exile; became prætor in B.C. 57, and after the death of Clodius gave his adhesion to Milo. In the civil war which opened in 49 he rendered Cæsar valuable service, but did not live long enough to reap reward: his oratory was highly commended by Cicero.

CALIF: see CALIPH.

CALIFORNIA.

CALIFORNIA, *kāl-ĭ-for'nĭ-a*: a state, one of the United States of America. The name, in a wider sense, designates also a region on the w. coast of N. America, extending from lat. 23° to 42° n., of which the s. portion, the peninsula called Lower C., or Old C., or Mexican C., is a territory of the rep. of Mex. (see end of article). The n. portion, Upper C. (Alta Calif.), or New C., is one of the U. S., and is commonly referred to when the name C. is used.

Area, etc.—The state of C. is bounded on the n. by Oregon, on the e. by Nevada and Arizona, on the s. by the territory of Lower C. in Mexico, and on the w. by the Pacific Ocean. Its boundary-line upon the n. is the line of 42° n. lat., upon the e. it is the line of 120° w. long. to its intersection with that of 39° n. lat., thence s.e. to the Colorado river at 35° n., thence the course of that river to its intersection with the Gila; the s. boundary is a line thence to a point a league s. of the port of San Diego. The state has thus a length of about 770 m., extending from lat. $32^{\circ} 30'$ to lat. 42° , i.e., from the lat. of Charleston, S. C., to that of Newport, R. I. The breadth of the state is from 150 m. to 330 m., its average 230 m. It is the second state of the Union in size; land surface 155,980 sq. m., water surface 2,380 sq. m., gross area 158,360 sq. m. (101,350,400 acres); cap. Sacramento.

Population.—(1850) 92,597; (1860) 379,994; (1870) 560,247; (1880) 864,694; (1900) 1,486,055. In 1880 the most populous *counties* were: San Francisco 233,959; Alameda 62,976; Santa Clara 35,039; Sacramento 34,390; Los Angeles 33,381; Sonoma 25,926; San Joaquin 24,349; Nevada 20,823; Butte 18,721; Solano 18,475; and Humboldt 15,512; and *cities and towns*: San Francisco 233,959; Oakland 34,555; Sacramento 21,420; San José 12,567; Los Angeles 11,183; Stockton 10,282; and Vallejo 5,987. In 1890 the most populous *counties* were: San Francisco 298,907; Los Angeles 101,454; Alameda 93,864; Santa Clara 48,005; Sacramento 40,339; San Diego 34,987; Sonoma 32,721; Fresno 32,026; San Joaquin 28,629; San Bernardino 25,497; Tulare 24,574; Humboldt 23,469; Solano 20,946; and Santa Cruz 19,270; and *cities and towns*: San Francisco 298,997; Los Angeles 50,395; Oakland 48,682; Sacramento 26,386; San Jose 18,000; San Diego 16,159; Stockton 14,424; Alameda 11,165; Fresno 10,818; Vallejo 6,343; Santa Barbara 5,864; Santa Cruz 5,596; Santa Rosa 5,220; Berkeley 5,101; Pasadena 4,882; Eureka 4,858; Riverside 4,683; Napa 4,395; and San Bernardino 4,012.

Surface, Hydrography, etc.—The most conspicuous features of the topography of C. are two great parallel chains or masses of mountains, the Sierra Nevada in the e., near the boundary of the state to which it gives its name Nevada, and the Coast Range in the w., along the verge of the Pacific Ocean. In the n. part of C. these two ranges join indistinguishably, and in the s. again, in the neighborhood of the Tájón pass, they become united into one chain, the San Bernardino range. But the central portion which is really the most important, is chiefly characterized by these two parallel systems and may be conveniently divided in consequence by five parallel lines,

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at distances of about 55 m. in each case. The principal peaks of the Sierra Nevada (snowy range), of which the loftiest are never entirely bare of snow, are ranged very nearly in a straight line, running n.w. and s.e. for more than 500 m. A line parallel to this, at a distance of 55 m. to the e., is found to be a line of depression occupied by lakes, mostly in Nevada, and marks the e. base of the Sierra Nevada. A third line at similar distance to the w. would mark their w. base; a fourth, still further w., the e. foot-hills of the Coast Range; a fifth, their w. edge, and the border of the ocean. Between the third and fourth of these, i.e., between the Sierra Nevada and the Coast Range, lies the great valley down which, in the n. portion, flows the Sacramento river, and in the s. the San Joaquin. The highest peaks of the Sierra Nevada are Mt. Whitney, 14,898 ft. high at its s. terminus, and Mt. Shasta, 14,442 ft. at its n. terminus. Between, lie in succession from n. to s. Lassen's Peak, 10,577 ft.; Castle Peak, 12,500; Mt. Tyn-dall, 14,386; Mt. Brewer, 13,886; and Mt. Dana, 13,227. This range is the w. edge of the great continental upheaval or plateau which is the chief feature of the conformation of the w. part of the United States. It is, excepting the Alaskan mountains, the loftiest and most extensive of the mountain ranges which constitute the Cordilleras of N. America. The Coast Range is of much less altitude; in the portions near San Francisco it does not anywhere rise much above 4,000 ft., though at the extremities where it approaches its junctions with the Sierra Nevada, it attains an altitude in the highest points of 8,000 ft. The n. part of C. is entirely covered by the interlocking spurs of the two ranges which give it a very rugged character. The s. part is traversed by numerous broken ranges, and has a character of extreme sterility owing to the want of water. Yet a narrow belt along the coast of this s. portion is fertile, exceedingly beautiful, and greatly favored in respect to climate.

C. has a coast line of more than 700 m. Most of it is rocky and good harbors are few. The bay of San Francisco forms the best and most capacious harbor on the w. coast of N. America, and one of the finest in the world. It is nearly 50 m. in length, with a breadth averaging nine m., with good anchorage, deep water, and perfect shelter on all sides. Its entrance is a strait about five m. long and one m. wide, inclosed between high cliffs and called the Golden Gate. The bay is one of great beauty and is diversified by smaller bays opening into its n. end, and by numerous islands on one of which is the Mare Island Navy Yard of the United States government. Humboldt Bay on the n. part of the coast is the best harbor in that part. Southward from San Francisco are the bays of Santa Cruz, Monterey, San Luis Obispo, San Pedro, and San Diego, of which the last, at the extreme s. end of the coast, is next in importance to San Francisco Bay, both for security and for advantages of geographical position. Of the islands off the coast the rocky group called the Farallones, opposite the Golden Gate, have been of great im-

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portance as the resort or numberless sea-fowl, whose eggs have been collected there in great quantities. Off the s. coast are several much larger islands mostly occupied by large flocks of sheep.

The principal rivers of C. are the Sacramento and the San Joaquin. The course of both lies in the great central valley already mentioned. The Sacramento rises in Mt. Shasta and flows s.; the San Joaquin rises in the Tulare lake in the s. end of the valley and flows n. Near lat. 38° they unite and flow w. into San Francisco Bay. Both have many small tributaries. The Sacramento, 370 m. long, is navigable 120 m. from San Francisco; the San Joaquin, 350 m. long, is navigable for steamers for about the same distance. In the n. part of the state the Klamath river, which has its rise in Oregon, flows w. into the Pacific. The Colorado which forms the s.e. boundary of the state is navigable 612 m. from its mouth. Of the numerous rivers of the Coast Range only one, the Salinas, flowing into the Bay of Monterey, is navigable. The river valleys and especially the central one, are in general the most favored parts of the state.

C. has several large lakes. The largest is Tulare Lake, at the s. end of of the central valley. It is 33 m. long, and 22 m. wide. Upon the e. slope of the Sierra are several large mountain lakes. Most of these are alkaline and without outlet; some are little more than mud-flats, the sinks of interior rivers. Lake Tahoe, at the angle in the boundary of C. and Nevada, is a beautiful lake of exceedingly pure water; it is about 20 m. long, and 1,500 ft. deep. Another lake of great beauty is Clear Lake, in the midst of the Coast Range, n. of San Francisco Bay.

Climate.—C. presents a great variety of climates, but almost all are remarkably equable and fine. Extreme heat and cold are almost unknown in all; yet there exist great contrasts in respect to temperature between places separated from each other by but a short distance. The climate of the interior regions is hot and dry; the sea-shore climate cool and moist. The latter derives its low temperature from the ocean, the water of which, along the coast, is kept at from 52° to 54° all the year around, by reason of a steady current from the n., and northerly winds prevailing during the summer. These bring daily supplies of cool, damp air upon the coast regions. The valleys around the bay of San Francisco partake of both climates. No climate in the world is more delightful than that of these districts (save for the dustiness which results from slighness of rainfall) and of the s. coast districts. As an illustration of the equableness of temperature, an instance has been known of a ranchman near Monterey picking ripe strawberries from his vines every day in the year for several years in succession.

At San Francisco the temperature sometimes does not sink to the freezing point during the whole year; and on the other hand figures taken during 17 years showed but six days on which it rose above 90° F. The mean temperature of the coldest months, Dec. and Jan., is 50° (55° and 56°

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at noon), that of the warmest, Sep., 60° (69° or 70° at noon). The yearly mean is 55° . As one recedes from the ocean, the days are warmer and the nights colder. It is a noteworthy anomaly, that in the nine degrees of latitude from the mouth of the Columbia to Monterey, the mean temperature varies but little—not more than three or four degrees at most. But the interior climate varies indefinitely; indeed, every valley has a climate of its own; the summers are generally hotter in the n. The sudden fluctuations of temperature so conspicuous in the climate of the Atlantic states are unknown in C. In the summer months there is scarcely any fall of temperature through the night in the coast climate, and not much in the interior. The Colorado desert, in the s.e. corner of the state, has an extremely hot and dry climate, Fort Yuma being probably the hottest place in the United States. On the other hand, certain of the n. valleys, bordering on Oregon, have a winter climate of great severity.

Except in Dec. and Jan. the prevailing wind is a sea-breeze from the w. There are also dry land-winds from the n. The stormy winds are usually from the s. Throughout C. rain is confined to one portion of the year, but both the amount of rain-fall and the length of the rainy season diminish as one approaches the s. part of the state, and as one recedes from the mountains. At San Francisco the mean amount of rain-fall is 21 in., though the variations are considerable. The regions around the bay give much the same figures; in some localities in the Sierras it is three or four times as great; at San Diego and Monterey it is but 10 or 12 in. December is the month of greatest rain, and winter is the rainy season, so far as there is any. The rains are sudden and showery, as in the tropics. Snow is rare; hail falls a few times in the winter; in the Sierras there are, of course, heavy snows. Thunder and lightning are seldom observed, thunderstorms almost unknown.

These peculiarities have an important effect upon natural productions, especially in prolonging the season of their maturity. Fruit trees bear early and with long continuance. In southern C. roses bloom all winter. The warm and dry air of this latter region is exceedingly healthful and favorable to invalids, particularly consumptives. Monterey, San Diego, San Bernardino, Los Angeles, and Santa Barbara, have become famous winter sanitariums. The death-rate in C. is comparatively low.

Geology, etc.—The central mass, or core, of the Sierra Nevada is chiefly granite; this is flanked on both sides by metamorphic slates, and capped irregularly by vast masses of basaltic and other kinds of lava, and heavy beds of ashes and breccia, giving evidence of prodigious activity of the subterranean volcanic forces in former times, though these are now dormant, or appear only in occasional earthquake shocks. The granite belt widens to the southward, and, in the highest portion of the Sierra, has a breadth of nearly 40 m. Northward, the amount of volcanic matter increases, and above Lassen's Peak it covers

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the whole width of the range, forming a vast high plateau, on which are many conical peaks, having, in many cases, well-formed craters still visible upon their summits. These craters now exhibit no signs of activity; but hot springs are plentifully distributed along the line of former volcanic action. In the central part of the state some of the highest peaks, including Mt. Dana, are made up of slates and metamorphic rocks. The Coast Range is composed of newer geological formations than the Sierra, and they have been subjected to great disturbances down to a very recent geological period. No rocks in the Coast Range are older than the Cretaceous period. Strata of this and the Tertiary age make up nearly their whole body, with some masses of volcanic and granitic materials, though neither forms anything like a central nucleus. Sandstones and highly bituminous shales are the chief formations here.

Earthquakes are somewhat frequent, one or more shocks being felt nearly every year; but these are seldom very destructive. Shocks of great violence were felt in 1812. In 1865 considerable destruction was effected in the region around the bay of San Francisco, and in 1872 there were violent disturbances of the whole region of the Sierra Nevada. Very few lives were lost in these recent cases.

Much of the scenery of C. is fine in the extreme. An especial fame in this respect attaches to the Yosemite Valley on the w. slope of the Sierra Nevada. This valley is on the Merced river, in the e. part of Mariposa co., 140 m. in a straight line a little s. of e. from San Francisco. The valley is a nearly level arca, about 6 m. in length, and from half a mile to a mile in width. It is almost a mile in perpendicular depth below the general level of the adjacent region, and is inclosed between granite walls rising with almost unbroken and perpendicular faces to a height of 2,000 or 3,000 ft. From the brow of the precipices in several places spring streams of water which, in seasons of rain and melted snow, form cataracts of singular beauty. One of these has a total height of not less than 2,600 ft., divided into three parts, but having one fall of 1,500 ft. The scenery of the valley is magnificent, and scarcely surpassed anywhere in the world. The valley has been granted to the state of C., together with the Mariposa Grove of Big Trees, on condition that they be kept for public use, resort, and recreation, and that they be inalienable for all time. Other valleys and canons in the Sierra Nevada present scenery of remarkable beauty. Many of them exhibit extensive evidences of glacial action, though there is no true glacier at present in the state.

Minerals and Mining.—The mineral resources of C are very varied, but are also of very unequal importance. Its gold production is of so great amount as to be an essential factor in determining the relations of the mediums of exchange throughout the world. Its quicksilver production, though of much less value, exceeds that of any other country; this is of importance not only in itself, but

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as a necessary means to the production of the precious metals. The silver product has a large value. The coal-fields, though not of the best, furnish a large part of the supply necessary for home consumption. Lead is incidentally obtained in silver-mining; copper and iron, though abundant, are thus far worked on a small scale only. Tin, chromic iron, black oxide of manganese, and other useful minerals occur. Asphalt and petroleum are obtained in small quantities, as well as some sulphur and borax.

The chief sources of gold are gold-quartz veins and auriferous gravels lying upon the w. slope of the Sierra, though some gold is found elsewhere. The greater part of the gold-quartz veins is inclosed in a belt of metamorphic slates and shales, 20 or 30 m. wide and about 150 m. long, in the northern-central part of the state. The veins are most frequent and richest in the argillaceous slates herein occurring. The most remarkable primary metaliferous deposit is the 'mother lode,' a vein some 80 m. long, and many of the chief mines of the state are on or near it. The gold occurs in great part as flakes or even as masses, seldom in crystalline form, and always accompanied by sulphides of various sorts. Its distribution in the veins is usually very irregular. The area of auriferous gravels substantially coincides with that of gold veins. They have been of great importance in C. because, under favorable topographical conditions, a peculiarly cheap process of obtaining gold from them has there been developed. This is the process of hydraulic mining, which consists in washing the gravels, by means of powerful jets of water, into sluices provided with quicksilver. Gold occurs in the gravel as nuggets and fine particles, and as fragments of gold-quartz.

When the census of 1880 was taken, there were reported for C. 128 deep mines for the precious metals, with an average depth of a little more than a mile. Of placer mines, there were 147 reported. A difficulty has lately arisen in the case of these, in that owners of farms in the valleys have brought suit to recover damages done to their land by sand and gravel deposited by the hydraulic washings of the mines, the mass of such material brought down being enormous. Something like half of the gold product of C. at that time came from deep mines, about a half from placers. C. furnishes one-fourth of the total gold product of the United States. During the calendar year 1902 its product exceeded \$18,000,000, while that of the whole country was valued (1901) at \$78,666,700. The amount of gold of domestic production deposited at mints and assay-offices in C. down to 1887, June 30, was valued at over \$745,000,000, and the total amount of its production of gold has been estimated at over a billion of dollars, probably not far from one-seventh of the entire amount of gold in existence. It is estimated that C. produces about one-seventh of the annual gold-yield of the world. Mining and washing for gold in C. on any considerable scale began in 1848, and the product reached its maximum, \$65,000,000, in 1853, since which time it has steadily declined. Its first phase

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consisted in the working of shallow placers by individual miners. As the most abundant supplies were soon exhausted, the high gravels and quartz veins were attacked in 1851, and have since then been the chief sources of the supply. Improved machinery and more scientific methods are constantly being introduced, to cope with the increasing difficulties, and the work is now done mostly by companies with large capital.

The product of silver in C. is of growing importance; in this respect the state stood (1901) seventh among the states and territories, yielding about 17 per cent. of the total product of the United States. The product during the year 1901 had a commercial value of \$555,360. Fortunately for the gold and silver mining industries, C. is abundantly supplied with quicksilver. The only important ore of it is cinnabar, which is found in a great number of localities in the Coast Range for 100 or 150 miles n. and s. of San Francisco. By far the most prolific mine, and the one earliest worked in the state, is the New Almaden mine. Operations were begun in 1846, and for years it ranked second only to those of Almaden in Spain as a source of the world's supply. In 1881, this mine produced 26,000 flasks of $76\frac{1}{2}$ pounds each, and the total product of the state was estimated at 61,000 flasks; in 1885, it was 32,000. Iron ores occur in numerous localities in the state, but not generally under circumstances which have yet made their reduction profitable. The chief ores are magnetite and limonite. The production of pig-iron in C., which had risen to over 5,000 tons, was in 1886 only 1,750 tons. Copper ores are abundant, but the high prices of labor, fuel, and transportation, have hitherto prevented these also from being worked on any extensive scale. The production of salt, chiefly by evaporation, has attained large dimensions; in 1901, C. stood sixth of the states, with a product of about 601,660 barrels. Valuable beds of asphaltum are found in many places; the most important, near Los Angeles, covers 60 acres, and has a great depth. Bitumen occurs quite largely, and there is an increasing production of petroleum; in 1901 it amounted to over 8,786,300 bbls. There are only a few productive coal mines in the state. These are mostly in the Monte Diablo range, near the San Joaquin R. Estimated (1901) to have produced 151,079 tons. In respect to building stone, the resources of C. are immense; quality excellent. Granite, basalts, and sandstones abound. Numerous mineral springs are known to exist in C. some of which have obtained at least a local celebrity.

Fauna.—Of carnivora, the grizzly bear (*ursus horribilis*) and the black bear (*ursus Americanus*) are among the most noteworthy. The former, formerly very common, has now become greatly diminished in numbers. There are other species of carnivora peculiar to the Pacific slope. The fisher and the American sable or marten, are occasionally found in the high Sierras. Seven species of foxes are known. Sea-lions frequent rocks and islands near the sea-shore, and fur-seals occasionally appear at the

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Farallones. The beaver and gray ground-squirrel are common. The sewellel, or mammoth-mole, resembling the beaver, but without a tail, is an animal peculiar to this coast. Gophers are numerous, and troublesome to farmers. The elk is found in the forests of the n. countries; there are several varieties of deer, the black-tailed deer (*cervus Columbianus*) being the most common. Antelopes were formerly found in large herds in the dry plains and valleys. The mountain-sheep or 'big-horn,' is now found only in the higher parts of the Sierra Nevada. Whales and porpoises abound along the coast. All the orders of birds common to temperate climates are well represented; there is little migration among them because of the equable climate. The C. vulture (*cathartes Californianus*) is remarkable as the largest land bird that flies n. of the Andes. Humming-birds frequent C. more than any other state. Grouse and quails, or partridges, geese, and ducks abound. There are no venomous reptiles except rattlesnakes. Lizards are more fully represented than in any other state. C. is well supplied with fishes; not only are its own markets fully stocked at all seasons, but great quantities are salted and dried for use at the mines, and for exportation to China. Salmon and trout are plentiful; the oyster industry is considerable.

Flora.—The flora of C. is extensive, and in many respects peculiar, since the ocean on the one hand and the lofty Sierra Nevada on the other have in a measure shut out from it the vegetable species of other regions. The variety and abundance of wild flowers is extraordinary, though in general they are not remarkable for fragrance. Many of the plants of the state have a medicinal value. The grasses, though abundant and valuable for pasturage, are in most cases not well adapted for making hay. Many fine fruits are indigenous, and attain large size; by some it has been asserted that they are inferior in flavor, though this view is not general. The rapid growth of California vegetation is worthy of remark. The forests of the state claim chief attention. The forest trees are of numerous species, some of which—as the mammoth or big tree (*sequoia gigantea*) and the Monterey cypress (*cupressus macrocarpa*)—occur nowhere out of C. The heavy forests are confined to the Coast Range, the Sierra Nevada, and the group of mountains joining these two ranges in the n. part of the state. The principal trees of the Coast Range forest are the redwood and the red fir. The chestnut oak is common in the n. part of the state. The most valuable forest region of the w. slope of the Sierra Nevada is a belt between the altitudes of 4,000 and 8,000 ft. Sugar pine, yellow pine, and red fir are the chief trees in these forests. The 'big trees' occur in small, scattered groves in the s. part of this belt. Below this elevation, upon the slope, are pine forests of minor economic importance, while the great valley between the two ranges is largely covered with an open growth of oaks. The e. slope of the Sierra is covered with heavy forests, mostly of yellow pine. The n.e., s.,

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and s.e. parts of the state are for the most part bare of forests.

The narrow belt of redwood which covers the w. slope of the Coast Range from the n. boundary of C. to the Bay of Monterey is the most important forest of similar extent now standing. Few trees equal the redwood in economic value. No other forest has so great productive capacity, and no other great body of timber in N. America is so accessible and so easily worked. Single trees affording 75,000 ft. of lumber are not uncommon, and a yield of from 1,000,000 to 2,000,000 ft. per acre is by no means rare. In 1880 the amount of lumber manufactured in C. was 305,000,000 ft. The forests suffer severely by fire, and are also injured by the pasturage of immense herds of sheep, cattle, and horses in them. These devour or destroy young trees, and make doubtful the future of the great mountain forests.

An especial interest attaches to the *Sequoia gigantea*, the largest tree of the American forest, and surpassed in height by the Australian eucalyptus only. The 'big tree' occurs only in C., and occurs there in but eight groves, though the number of trees in these taken collectively is large. These groves are found on the w. slope of the Sierra, between lat. 36° and 38° 15' n. The most famous of them, the Calaveras grove, contains between 90 and 100 sequoias of large size and a considerable number of small ones. Thirty one of these trees have an altitude of more than 230 ft., the tallest being 325 ft. high, the largest 61 ft. in circumference at 6 ft. above the ground. One of the largest trees, cut down, had at this height a diameter of 24 ft., and showed by its rings, an age of 1,255 years. The Mariposa grove, containing 500 sequoias, has been granted by the general government to the state of C. as a reservation, on similar terms to those already mentioned in the case of the Yosemite Valley.

Agriculture.—Mining is no longer the chief occupation in C. By the census-returns of 1880 it appeared that more persons were engaged in agriculture than in any other pursuit; their number amounted to more than one-fifth of the persons engaged in all kinds of occupations. The farming lands of the state had an area of nearly 16,600,000 acres, and their value was estimated at \$262,000,000. Since then there has been a rapid development. The agriculture of C. is peculiar in that so large an amount of attention is given to other crops than those most prominent in the United States at large. At the same time the growth of cereals is extensive, and stands first in importance; in 1902 the acres sown with wheat, corn, oats, and barley numbered 3,426,059, and more than half a million acres were given to hay. In 1887, the state stood sixth in respect to the production of wheat, and fifth in respect to the value of its wheat crop; wheat is in fact the leading product of the state. Barley also occupies a very large place among its products; in 1880 the state stood by far the first in respect to the production of this grain. Hops are grown to a great extent; cotton and tobacco but slightly.

Of late years a great amt. of attention has been given

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to horticulture. C. excels in its grapes, pears, peaches, plums, prunes, apricots, nectarines, cherries, figs, olives, oranges, and lemons; and the cultivation of all these, the exportation of fresh fruit, fruit-drying, the raising of nuts, the canning of fruit, the making of wine and brandy, and the production of raisins, have been increasing with unexampled rapidity. In the year 1885 the dried fruits alone had a value of \$3,500,000. The total area of grape-vines was about 240,000 acres, and the vintage of wine and brandy for the year 1886 was estimated at 20,000,000 gallons. The extraordinarily rapid growth of these industries has produced considerable difficulties in respect to the supply of labor. A great number of laborers is annually needed during a brief period, which brings the labor-market temporarily into an abnormal condition. The employment of Chinese in these industries was at one time resorted to, but has met strong opposition.

Many parts of the region of the Coast Range, kept moist by the sea-breezes, are excellently suited for dairy-farming, which has accordingly become extensive. The mildness of the winters w. of the Sierra Nevada is favorable to the growth, health, and early maturity of live-stock, which does not anywhere multiply more rapidly without shelter or cultivated food than in the valleys of C. Sheep, especially, are raised in very large numbers. In 1880, the number of sheep in the state was over 4,000,000. The system of stock-raising is that of large ranches and vast herds; ranches of 20,000 acres are not uncommon, and there are several of over 100,000 acres. Indeed, a similar state of things exists in all the agriculture of C., as may be seen from the fact that the number of farms is not much greater than in Connecticut, and is less than in Massachusetts, though the total area of farms is six times as great as in either. Bee-culture and the making of honey are growing to be an important industry.

Manufactures.—In 1880, there were 5,885 manufacturing establishments in C., with a capital of \$61,000,000, employing 43,800 hands, and affording an annual product valued at \$116,000,000. The products of flouring-mills and grist-mills stood first among these, making one-tenth of the whole. Boots and shoes and leather stood next; slaughtering and meat-packing stood next to these industries. The other chief classes of manufactures were refined sugar and molasses, clothing, foundry and machine-shop products, lumber, wines, and distilled and malt liquors, manufactures of tobacco, and the products of printing and publishing.

In 1900 the manufacturing establishments numbered 12,582; had an aggregate capital of \$205,395,025, of which \$8,360,892 was for salaries to officials, etc.; employed 91,047 persons; paid \$47,425,947 for wages, \$188,125,602 for materials, and \$16,190,282 for miscellaneous expenses; and had an output valued at \$302,874,761. The collections of int. rev. in Cal. and Nev., reported together, in the fiscal year ending 1902, June 30, aggregated \$4,200,652 and \$31,323,788 respectively.

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Banks.—In 1895 (Oct. 31) there were 31 national banks in operation, with a combined capital of \$7,625,000; outstanding circulation, \$1,643,918; loans and discounts, \$18,382,059; deposits, \$17,742,778; reserve required, \$3,302,559; and reserve held, \$5,871,725. There were (June 17) 173 state banks, with capital, \$43,547,699; deposits, \$56,583,174; resources, \$130,514,625; and surplus and profits, \$17,626,818; 57 stock savings banks, with capital, \$8,797,850; depositors, 168,638; deposits, \$126,830,513; resources, \$144,990,729; and surplus, \$6,478,338. In 1902 there were 50 national banks in operation with a combined capital of \$11,875,000.

Commerce.—The imports of merchandise at the ports of Humboldt, Los Angeles, San Diego, and San Francisco, in the year ending 1895, June 30, had a value of \$37,280,052; of gold and silver coin and bullion, \$3,923,476; and the exports were, merchandise, \$25,031,663, coin and bullion, \$14,052,305. During the year 1,057 vessels of 1,305,211 tons entered these ports, and 946 of 1,133,750 tons cleared.

Railroads.—The railroad system of C. began in 1853 with the Sacramento and Placerville railroad. But far more important to its development than any internal lines of railway was the line, early proposed, which should connect the Atlantic coast with the Pacific. The first company to construct such a road was formed 1852, and government surveys for routes soon followed. In 1862, an act of congress was passed providing for the construction of a railroad from the Missouri river to Sacramento and San Francisco by the Union Pacific and Central Pacific railroad companies, and granting those companies large subsidies. In spite of great difficulties arising from the topography of the country and other causes, the work went forward with reasonable dispatch, and in 1869 transcontinental communication was established—an event of vast consequence to the whole Pacific slope. C. is now directly or indirectly connected with the eastern states by several different lines of railway, approaching the state at its n. and s. extremities as well as in the central part. Railroad building within the state has meantime been continued upon a great scale, and at the beginning of 1896 the length of railroads was, main track 5,056 m., all tracks 7,222 m. The roads had capital \$197,712,612, funded debt \$185,419,920, and total investment \$384,266,291; cost for construction and equipment, \$410,991,295; made \$46,713,807 in gross earnings and \$15,839,579 in net earnings, and paid \$11,758,388 in interest, during 1895.

Finance.—The total bonded debt of the state in 1902 was \$2,281,500, of which \$2,277,500 was held in trust for the State University and state school funds; and of the counties, \$5,140,887. The assessed valuation was \$1,290,750,465, and the tax rate \$3.82 per \$1,000. A new law regulating indebtedness for public improvements was enacted in 1901.

Churches.—In 1890 there were reported 1,996 religious organizations, with 1,505 church edifices and 425 halls.

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used for church purposes, 280,619 communicants, and \$11,961,914 invested in church property. The principal denominations were the Rom. Cath. (156,846), Meth. Episc. (25,527), Presb., N., (16,236), Congl. (11,907), Reg. Bapt., N. (11,204), Prot. Episc. (9,221) and Meth. Episc., S. (7,497). There were also 40 Chinese organizations, with 41 temples, 178 shrines, and religious property valued at \$37,000. The Prot. Episc. diocese of So. C., with seat at Los Angeles, was created 1895, Rev. Joseph F. Johnson, D.D., of Detroit, Mich., being elected the first bishop, Dec. 3.

Education.—At the end of the school year 1894, the number of children of school age in the state was estimated at 320,000, of whom 243,249 were enrolled in the public schools and 164,664 were in average daily attendance. There were 6,257 teachers, over 3,300 school houses, public school property valued at about \$15,500,000, and an aggregate expenditure of \$5,424,793. The universities and colleges of liberal arts numbered 16, and had 512 professors and instructors, 5,051 students in all departments, \$484,938 in total income, \$5,067,900 invested in grounds and buildings, \$2,730,383 in productive funds, and 154,230 vols. in the libraries. The receipts of the year from gifts and bequests were \$2,637,373. The principal superior institutions were the Leland Stanford, Jr., Univ. and the Univ. of Cal. There were 40 public high schools; 50 endowed private secondary schools; 3 coll. for women; 3 public, 2 private, and 3 coll. nor. schs.; 16 com. coll. and state institutions for the education of the deaf and dumb, blind, and feeble-minded children, and juvenile delinquents.

Latest Statistics—Agriculture. In calendar year 1902, the production of corn was 1,839,150 bushels, from 60,300 acres, value \$1,416,146; wheat, 22,374,201 bushels, from 2,052,679 acres, value \$17,899,361; oats, 5,148,583 bushels, from 168,806 acres, value \$2,625,777; barley, 29,751,124 bushels, from 1,144,274 acres, value \$18,743,208; rye, 808,908 bushels, from 67,409 acres, value \$606,681; flaxseed, 16,500 bushels, from 1,100 acres, value \$17,325; potatoes, 5,661,050 bushels, from 47,975 acres, value \$3,283,409; and hay, 1,006,049 tons, from 555,828 acres, value \$9,466,921. The farm and ranch animals, 1903, Jan. 1, were: Horses, 370,716, value \$22,485,881; mules, 67,708, value \$4,876,600; milch cows, 337,482, value \$13,644,397; other cattle, 1,111,767, value \$27,244,079; sheep, 2,365,884, value \$6,915,716; and swine, 511,311, value \$3,901,303. *Mineral Products, 1901.*—Gold, \$16,891,400; silver, coining value, \$1,196,736, commercial value, \$555,360; salt, 601,659 barrels, value \$133,656; quicksilver, 26,720 flasks; borax, 16,887 short tons, value \$297,198; petroleum, 8,786,330 barrels, value \$4,974,540; coal, 151,079 tons, value \$394,106; and asphaltum (liquid) 2,600 tons, value \$49,850. *Quarry Products, 1901.*—Granite (including trap rock), \$1,134,675; sandstone, \$301,028; slate, \$18,608; marble, \$6,642; and limestone, \$645,455. *Commerce, 1902.*—During the calendar year the imports of merchandise at the ports of Humboldt, Los Angeles, San Diego and San Francisco aggregated in value \$37,089,505, and exports of the

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same, \$38,467,665. The movement in the precious metals was: Gold, imports, \$10,117,039, exports, \$2,703,204; silver, imports, \$3,397,621, exports, \$8,284,022.65. *Finances*.—The total bonded debt of the state, 1902, July 1, was \$2,281,500, of which \$2,277,500 bore interest and was held in the state school and univ. funds. Total assessed prop. val. \$1,290,750,465; tax rate \$3.82 per \$1,000.

Government.—The suffrage is given to all male citizens of 21 years of age, with certain qualifications as to residence and registration. The governor is chosen for four years, annual salary \$5,000. The other chief executive officers are the lieut. gov., sec. of state, treasurer, comptroller, supt. of public instruction, attorney-gen., surveyor-gen., and railroad commissioners, all chosen for four years. The legislature consists of a senate of 40 members, and a lower house of 82, the former chosen for four years, the latter for two; it has biennial sessions, limited to 60 days, at Sacramento. The supreme court consists of 7 judges, elected by the people for terms of 12 years. The state is divided into 57 counties. The local govt. has been mainly county govt., though a division into townships has now been carried out. In the pioneer days a peculiar system of local organization into 'mining-districts,' each self-governing after a rude fashion, was spontaneously developed, and many of these organizations still survive.

The successive govts., with their terms of service are as follows:

Spanish.

Gaspar de Portala.....	1767-71	Jose J. de Arrillaga.....	1792-94
Felipe de Barri.....	1771-74	Diego de Borica.....	1794-1800
Felipe de Neve.....	1774-82	Jose J. de Arrillaga.....	1800-14
Pedro Fajes.....	1782-90	Jose Arguello.....	1814-15
Jose A. Roman.....	1790-92	Pablo V. de Sola.....	1815-22

Mexican.

Pablo V. de Sola.....	1822-23	Nicolas Gutierrez.....	1836
Luis Arguello.....	1823-25	Mariana Chico....	1836
Jose M. de Echeaudia	1825-31	Nicolas Gutierrez.....	1836
Manuel Victorio.....	1831-32	Juan B. Alvarado.....	1836-42
Pio Pico.....	1832-33	M. Micheltorena.....	1842-45
Jose Figueroa.....	1833-35	Pio Pico.....	1845-46
Jose Castro.....	1835-36		

United States.

John D. Sloat.....	1846	Stephen W. Kearney.....	1847
Robert F. Stockton.....	1846-47	Richard B. Mason.....	1847-49
John C. Fremont.....	1847	Bennet Riley.....	1849

State.

Peter H. Burnett.....	1849-51	William Irwin.....	1875-79
John McDougall.....	1851-52	George C. Perkins.....	1879-83
John Bigler.....	1852-56	George Stoneman.....	1883-87
J. N. Johnson.....	1856-58	Washington Bartlett.....	1887
John B. Weller.....	1858-60	R. W. Waterman.....	1887-91
Milton S. Latham.....	1860	H. H. Markham.....	1891-94
John J. Downey.....	1860-62	James H. Budd.....	1894-98
Leland Stanford.....	1862-63	Henry G. Gage.....	1898-02
Fred F. Low.....	1863-68	George C. Pardee.....	1902-
Henry H. Haight.....	1868-72		
Newton Booth.....	1872-75		

History.—The name C. seems to have been borrowed from a Spanish romance of chivalry, *Las Sergas de Esplandian*, published first, Madrid 1510. In relating the exploits of

Esplandian, son of Amadis of Gaul, the romancer in one passage describes a marvellous island called California, lying to the right hand of the Indies. The name was first applied to Lower C., soon after its discovery. Lower C. was discovered by men sent out by Cortés, 1534. Upper C. was visited first by Juan Cabrillo, 1542-43. In 1579, Sir Francis Drake visited the coast in his famous voyage around the world. No settlement was made until, in 1769, an expedition from Mexico founded San Diego, its purposes being both occupation and settlement on the one hand, and the propagation of Franciscan missions on the other. In 1775, the mission at San Francisco was founded. The missions advanced rapidly, and increased in material prosperity; they were admirable in intention, though their converts were not stimulated to independence and self-help. A few foreigners, French, English, and American, touched upon the coast before the close of the century. In 1812, the Russians, coming from what was then Russian America, founded on the n. part of the coast a small colony which remained till 1841. In 1822, Mexican independence was proclaimed in C., and the first provincial legislature was chosen; but throughout the whole succeeding period the subjection of the province to the Mexican government was often not much more than nominal. The Californians showed themselves jealous of all Mexican interference, quarrelled with the Mexican governors, and in 1836 by revolution put themselves in a position of virtual independence, under a Californian governor, Alvarado. By 1840 the white population of the 'department' had increased to 5,780. The rest of the political history of C., to the time of the conquest by the 'Americans,' is one of petty quarrel and intrigue; there was especial dissension between the n. and s. districts. Meanwhile the estates of the missions had been to a large extent secularized, and the church ceased to be a power. The Californians were engaged mostly in raising cattle for the hides and tallow. They were a simple-hearted people, with the gay sociability, grace, and geniality of southern Europe, unprogressive, and not altogether strong in character, though in general moral and law-abiding. A few hundred Americans were in the country at the end of the period, some in the regions of the coast, where they were well received by the Californians, some in the separate settlement, founded by Sutter, a Swiss, in the Sacramento valley. In 1842, Commodore Jones, of the U. S. navy, acting on a mistaken report of hostilities between the United States and Mexico, seized the port of Monterey, but on better information at once withdrew.

The United States did not cease to desire the acquisition of C. The story of the movements which brought about that acquisition is complicated, but may be summarized as follows. In 1845, Capt. John C. Frémont, of the U. S. topographical engineers, who had already distinguished himself in remote western exploration, set out with a well-armed party of 60 men to do topographical work in C. A quarrel occurring (1846) between this party and the Californians, General José Castro, commander of the latter, ordered Capt.

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Frémont to depart. The latter intrenched himself, but soon retreated to the n. of C. Here he was found by Lieut. Gillespie, who brought him private letters from Washington. It has also been supposed that he brought him orders from the government there, which were the cause of the course immediately pursued by him, the seizure of C. by force of arms. It now appears, however, that on the contrary our government's efforts were at that time directed to the acquisition of C. by peaceful intrigue, through our consul at Monterey, with the inhabitants, who were to be induced first to make themselves independent of Mexico and then to seek annexation to the United States. Soon after Capt. Frémont had received his letters, in which perhaps his subsequent course was suggested by his father-in-law, Senator Benton, troubles arose between the American settlers in the Sacramento valley and the Californians; these were caused by aggressions of the Americans, who next seized prominent Californians, proclaimed a government of vague program, called the Bear-Flag Republic, and at once received the support of Frémont. Soon after this, war between the United States and Mexico began, and 1846, July, Commodore Sloat, U. S. N., raised the American flag at Monterey. The unprovoked and unauthorized attack on C. thus became a part of the Mexican war.

Capt. Frémont, Commodore Stockton, successor of Sloat, and Gen. Kearny, who advanced into C. from New Mexico, completed its conquest before the end of the year, meeting with little effectual resistance. The Californians rose once in revolt, but were finally defeated early in 1847, in the battle of San Gabriel, near Los Angeles. It was highly unfortunate for the mutual relations of the two races in the future that the acquisition was brought about by conquest, and not by peaceable methods. By the treaty of Guadalupe Hidalgo, 1848, C. was ceded to the United States. Just before the treaty was agreed upon, a discovery was made which vastly enhanced the value of the acquisition. In 1848, Jan., as a saw-mill near where Coloma now is, and belonging to the Sutter already mentioned, was being constructed, one Marshall, superintending the work, accidentally discovered particles of gold. It was found that the soil of these parts of C. was rich in gold. No gold-mines of such productivity had been seen in the world before. The Americans already in C. crowded to the diggings, large amounts of gold were obtained, and C. immediately became a different country. At first the news of the discovery was hardly believed in the eastern states (though Humboldt had predicted such discoveries, and some small washings had been carried on since 1841), but soon, early in 1849, a great excitement broke out. From all parts of the country men flocked to C., by steamers *via* the isthmus of Panama, by sailing-vessels around the Horn: and by overland trains. Great numbers also came from Europe; the population, which in 1846 was probably less than 8,000, rose to 93,000 in 1850, and San Francisco, from a small village, became a thriving city.

Great moral and social difficulties arose from this influx.

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The exciting pursuits of mining and speculation attracted many rough, lawless, and even criminal men, and a condition almost approaching anarchy was the result. This alarming state of things was aggravated by the peculiar governmental status of the newly-acquired territory. Congress had not found opportunity to establish any civil government for it, because of the difficulty of deciding whether slavery was to be admitted into it or not. In the autumn of 1849 the people, resolving to act for themselves, framed a state constitution, and applied to congress for admission as a state. This constitution forbade slavery and delays therefore occurred; but in 1850, as a part of Mr. Clay's compromise measures, it was provided that C. should be admitted as a free state. But severe struggles were necessary before the social order could be satisfactorily restored. Lynch-law was persistent in the mining-camps. Twice in San Francisco, 1851 and 1856, vigilance committees of prominent citizens were organized as the one means of coping with the lawlessness and other evils of the city. Since the restoration of order, the chief events in the history of the state have been the establishment of connection with the east, already described, the growth of industries other than mining, especially of agricultural industries, the anti-Chinese agitation, and the adoption in 1879 of a constitution embracing many provisions hostile to the interests of corporations. In national politics the state was continuously democratic down to 1860, continuously republican from 1860 to 1876. A popular name for it is the *Golden State*.

LOWER CALIFORNIA (*Baja California*): a territory of the republic of Mexico. It consists of a long and narrow peninsula extending s. between the Pacific Ocean on the w. and the Gulf of C. on the e.; about 750 m. long and of varying breadth; 61,562 sq. m. Its s. extremity, Cape San Lucas, is in lat. 23° n. The territory is largely occupied by mountains. The climate is exceedingly arid, the soil mostly a sandy or stony waste. Yet there are, here and there, valleys of great fertility, and valuable mineral deposits, especially in the s. extremity, where the capital, La Paz, is situated. Harbors are numerous, and Magdalena Bay, lat. 24° 38', is one of great excellence. Whale-fisheries and pearl-fisheries have been the most profitable industries, the latter of late years not so remunerative as formerly. Companies have from time to time been formed to develop more fully the resources of the territory, but its dryness and sterility have hitherto prevented much increase of population. The peninsula was entered by Jesuit missionaries 1697, and a permanent mission was established at Loreto, on the e. coast. Here and elsewhere the Jesuits maintained themselves, with some success, until their expulsion 1767. Their property passed first to the Franciscans, but soon the Dominicans acquired exclusive possession of the peninsula. Since 1822. Lower C. has shared the fortunes of the republic of Mexico. Pop. (by census, 1900, Oct. 28) 47,082.

J. D. Whitney, *Geological Survey of C.*, 6 vols., and *Guide-book to the Yosemite*; *Tenth Census U. S.*; J. S. Hit-

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tell, *Industries and Resources of the Pacific Coast*; W. Lindley and J. P. Widney, *C. of the South*; H. H. Bancroft, *History of C.*, 5 vols.; J. S. Hittell, *History of C.*, 3 vols.; J. Royce, *California*; C. H. Shinn, *Mining Camps*.

CALIFORNIA, GULF OF: an arm of the Pacific Ocean, which divides the peninsula of Lower California from the rest of Mexico. It was known originally as the Sea of Cortez, having been discovered under his auspices, and explored by him; and it has, from its shape, been occasionally designated the Adriatic of the new world. It is 700 m. in length, and varies in width from 40 to 100 m. At its n. extremity, it almost touches the territory of the United States, receiving therefrom the united streams of the Gila and the Colorado. The gulf contains many islands, particularly towards its head, and has long had a pearl-fishery. At the east side of its entrance stands Mazatlan, on a river of the same name, now the most frequented port of the neighboring regions.

CALIFORNIA, UNIVERSITY OF: principal institution of superior education in that state; an integral part of the public educational system. Its administration is in the hands of a body of regents including the gov. of the state, lieut.gov., speaker of the assembly, state supt. of public instruction, the presidents of the State Agricultural Soc. and the Mechanics' Institute of San Francisco, the pres. of the univ., and 16 other regents appointed by the gov. and approved by the senate. The principal seat of the univ. is Berkeley. It includes, at that place, a college of letters, with three courses, and colleges of agriculture, mechanics, mining, civil engineering, and chemistry. It includes also, at San Francisco, the Hastings College of the Law, the Toland College of Medicine, and colleges of dentistry and pharmacy. The Lick Observatory, at Mt. Hamilton, has lately been associated with the univ. as an astronomical department. The univ. was instituted 1868, and established at Berkeley 1873; it succeeded to the College of California, which had been in existence since 1855. The professional colleges in San Francisco have since been added from time to time. In the colleges at Berkeley and the law college, tuition is free; women are admitted to all the departments. The univ. has a library of about 101,000 vols., an art-gallery, and various scientific museums and laboratories. The funds are derived from congressional and state grants, from taxation, and from individual gifts. In 1902, there were 481 instructors, and 3,057 students in all depts.; the productive funds amounted to \$3,035,027. In 1899, Benjamin Ide Wheeler, LL.D., was chosen pres.

CALIGRAPH: a kind of type-writer. See **CALLIGRAPH**.

CALIGULA, *ka-līg'ū-la*, CAIUS CÆSAR AUGUSTUS GERMANICUS, Roman emperor (reigned A.D. 37–41): A.D. 12, Aug. 31—A.D. 41; b. Antium: youngest son of Germanicus (nephew of Tiberius) by Agrippina. He was educated in the camp, where the soldiers gave him the by-name C., from the half-boots (*caligæ*) which he wore. On the death of his brother Drusus, he was made augur in his stead; and on the death of Tiberius (A.D. 37), who, it was suspected, had

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received foul-play at his hands, it was found that he had been appointed co-heir with the grandson of Tiberius; but the senate and the people allowed C. supreme and sole authority. In the beginning of his reign, he appeared hardly likely to fulfil the threat of Tiberius, who had talked of educating C. 'for the destruction of the Roman people.' He was, to appearance, lavishly generous and merciful, pardoning even those who had been the instruments of cruelty against his own family. But this ostentatious magnanimity was itself a disease, an unwholesome affectation, founded on no principle, or even humanity of heart, and coexisted with the most savage voluptuousness and lust. Consequently, when illness, the result of his vicious life, had weakened his faculties, the lower qualities of his nature obtained complete mastery. In addition to the senseless prodigality with which he commenced his career—expending in one year the enormous wealth left by Tiberius (720 millions of sesterces)—he began to manifest the most barbarous propensities. He banished or murdered his relatives, excepting his uncle Claudius and his sister Drusilla (with whom he carried on incestuous intercourse); filled Rome with executions, confiscating the estates of his victims; amused himself, while dining, by having victims tortured and slain in his presence; and uttered the wish 'that all the Roman people had but one neck, so that he might decapitate Rome at a blow!' To vie with Xerxes, he made a bridge of ships over the bay between Baïæ and Puteoli (a distance of three Roman miles and six hundred paces), and celebrated the exploit by a costly banquet on the middle of the bridge, and by collecting on it great numbers of people, and causing them to be drowned. His favorite horse was stabled in a palace, fed at a marble manger with gilded oats, was made a member of the college of priests, and afterward raised to the consulship. As a climax to all his absurdities, he declared himself a god, and had temples erected, and sacrifices offered to himself. To gratify his monstrous desires, he shrank from no infamy; he robbed, plundered, and taxed his subjects to a degree which seems almost incredible, and when even these means proved insufficient, he established a brothel in his own palace, and sent out his slaves to solicit public patronage for it. At length a conspiracy was formed against him, and the empire got riddance of him by an assassination.

CALIPASH, n. *kāl'ī-pāsh* [F. *carapace*; Sp. *galapago*, fresh-water tortoise]: the part of a turtle belonging to the upper shell containing the so-called green fat. **CAL'IPÉE**, n. *-ī-pē*, the part belonging to the under shell containing the yellow flesh. *Note*.—It has been suggested that these words are derived from, or are accommodations from, the Greek words *chalēpos* and *chalēpē*, rough, difficult—that is, indigestible.

CALIPERS, n. plu. *kāl'ī-pērz*, also spelled **CALLIPERS** [from **CALIBRE**, which see]: a kind of compasses with bowed shanks, for measuring the diameter of cylindrical, spherical, or other curved objects or work.

CALIPH.

CALIPH, n. *kā'lif* or *kā-īf* [Ar. *khalīf*, a successor: F. *calife*: Sp. *califa*]: the title assumed by the successors of Mahomet. CALIPHATE, *kāl'if-āt*, or CALIPHAT, n. *-āt*, the office or government of the caliph. Caliph is often spelled CALIF.

CALIPH, *kā'lif*: title of Mohammed's successors in temporal and spiritual power, from which the historians of the middle ages designated the Arab empire founded by these princes, the CALIPHATE. This empire, for two or three centuries, exceeded even the Roman empire in extent. As Mohammed died without leaving any sons, a contest arose concerning the inheritance of his power, which terminated (A.D. 632) in the triumph of Abubekr (q.v.), one of his fathers-in-law, over Ali, his nephew and son-in-law. Abubekr now assumed the title of Califet-Resul-Allah—i. e., Representative or Deputy of the Prophet of God. He sent forth his armies for the extension of Mohammedanism, and after several victories over the forces of the Byzantine empire, conquered Syria. He was succeeded, 634, by Omar, another father-in-law of Mohammed, by whom Egypt and Jerusalem were annexed to the caliphate. He assumed the title of Emir-al-Mumenin—i. e., Prince of the Faithful—a title which all subsequent caliphs retained. Othman, son-in-law of the prophet, was the third C., and was elected by six persons appointed by Omar before his death. During his reign (644-656), the Arabian empire grew with extraordinary rapidity, being extended into Persia, and w. along the n. coast of Africa as far as Ceuta. The Byzantine emperors recovered Egypt; but it was wrested from them again at a prodigious expense of blood. The people of Medina elected Ali-ben-Abi-Taleb as C. upon the death of Othman. The Shiites regard him as the first true Imam or high-priest, and honor him and his son Hassan almost equally with Mohammed himself. Contests against rivals prevented him from doing much for the extension of the caliphate. Moawijah, gov. of Damascus, having made himself really independent during Ali's life, and having extended his power over Syria, Egypt, and part of Arabia, became C. in 661, and founded the dynasty of the Ommiades, making the caliphate hereditary. He removed the seat of the caliphate to Damascus. His armies ravaged Asia Minor, and laid siege to Constantinople, but could not take it. He made important conquests, however, in central Asia. The caliphate did not remain long in the family of Moawijah, and frequently in one or other of the subject countries a governor raised himself to a temporary independence; and rival caliphs often contended for power. Abdalmelek (685-705) united all the Moslems under his dominion. Under his son, Walid I., the caliphate reached its zenith of prosperity, the Arabs conquering Turkestan, 707, Galatia 710, and Spain, 711. Under Hesham, the progress of the Arabs in the west was arrested by Charles Martel at Tours (732) and at Narbonne (736). The dynasty of the Ommiades in Asia terminated with Merwan II., 752, giving place to that of the Abbasides. But a branch of the Ommiades founded an independent caliphate at Cordova, and another

CALIPPIC CYCLE—CALISTHENICS.

founded one in Arabia, which subsisted till the 16th c. Abul-Abbas (750–754), the first Abbaside C., signalized himself by his cruelty and the torrents of human blood which he shed. His successor, Abu-Jafar, called Al-Mansur, a patron of the arts, but a persecutor of Christians, founded Bagdad (q. v.), and removed the seat of the caliphate thither. From the beginning of the 9th c., the Arab empire, which had suffered much from corruption and internal disorganization under the last caliphs of the Omniade dynasty, and had never completely recovered, showed increasing signs of decay. Even under the C. Harun-al-Raschid, whose praises the eastern poets were accustomed to celebrate, independent kingdoms were established (800) by the Aghlabides in Tunis, and the Edrisides in Fez. In 821, Taher, gov. of Khorassan, made himself independent, and established a dynasty there, and other governors of provinces followed his example. But under the C. Al-Mamun, the Arabians conquered Sicily and Sardinia, the former of which they held till it was taken from them 1035 by the Normans; and the latter, till it was conquered by the Pisans, 1051. The C. Motassem (833–842) was the first to employ Turkish soldiers; but the practice was followed by his successors; and the Turkish body-guard soon became a formidable power in the caliphate, and about the middle of the 9th c. assumed the right of deciding the succession to the throne. Many of the caliphs, meanwhile, were base voluptuaries, and of the others, some were of little capacity, and their power rapidly declined. Ere the middle of the 10th c., the caliphs themselves exercised a mere nominal sovereignty, while the emirs, like the mayors of the palace toward the close of the Merovingian dynasty among the Franks, exercised all real power. The princes of the Fatimide dynasty, which succeeded that of the Aghlabides in Tunis, having made themselves masters of Egypt, 970, assumed the title of C., so that there were now three caliphates—at Bagdad, at Cairo, and at Cordova. In the 11th c., the caliphs of Bagdad were still acknowledged as the spiritual chiefs of all the Moslems; but their temporal power scarcely extended beyond the walls of Bagdad. Bagdad itself became the prey of a Mongol horde, 1258, and the representative of the caliphs fled to Egypt, where, under the protection of the Mamelukes, who had made themselves masters of that country, 1250, he retained his title and spiritual power, which he transmitted to his successors, who continued to reside there till the Turks conquered Egypt, 1517, when the last of them was carried to Constantinople; and since that time the Turkish sultans have assumed the title of C., and claimed to be regarded as the spiritual chiefs of all the Moslems, a claim which has had little respect beyond the limits of their own empire.

CALIP'PIC CY'CLE: named from Calippus, or Callippus, astronomer of Greece, B.C. 4th c.: see **PERIOD**.

CALISTHENICS, or **CALLISTHENICS**, n. plu. *kāl'is-hēn'iks* [Gr. *kalos*, beautiful; *sthenos*, strength]: the art of promoting the health and proper development of the body by exercise; the exercises employed for this purpose. **CAL'ISTHEN'IC**, a. pertaining to.

CALITRI—CALIXTUS.

CALITRI, *ká-lē'trē*: town of Italy, province of Avellino, near the Ofanto, 7 m. e.n.e. of Conza. Agriculture is a chief pursuit. Sheep are reared in the vicinity. Pop. 6,200.

CALIVER, n. *kál'ī-vēr* [old Dut. *koluvre*, a kind of cannon: Sp. *calibre*, a bore, a diameter: comp. L. *colūber*, an adder (see **CALIBRE**)]: in *OE.*, a matchlock or fire-arm about midway in size and character between an arquebus and a musket; it was small enough to be fired without a rest or support.

CALIXTINES, *ka-līks'tīnz* or *ka-līks'tǐnz*: Bohemian religious sect, named from the Latin *calix*, a cup, because they contended for giving the cup, as well as the consecrated wafer, to the laity. Their confession of faith (1421) contained the following articles: 1. That the word of God ought be freely and regularly preached by the priests of the Lord throughout Bohemia; 2. That the eucharist in both kinds ought to be administered to all burdened with 'no mortal sins,' according to the language and command of the Savior; 3. That the clergy should separate themselves from secular affairs, 4. That all 'mortal sins' and especially public ones, such as debauchery and simony, and any other disorders contrary to the law of God, should be prevented or punished by those who were the lawful authorities in such matters. In other main points they were moderate followers of John Huss, and were opposed to the more extreme sect of Taborites (q.v.). Their peculiar articles of faith were conceded by order of the council at Basel (1433); and having prevailed over the Taborites in the conflict which took place at Boehmischbrod, 1434, May 30, they became the dominant party in Bohemia, and exercised considerable influence over political affairs. Gradually, however, the C. lapsed from the severity of their four articles, while the schism of the energetic Taborites, and later of the Bohemian Brethren (q.v.), rendered them powerless, so that at the beginning of the 16th c., they served only to prepare the way for Protestantism.

CALIXTUS, *ká-līks'tús* **GEORG** (properly, *Callisen*): Lutheran theologian; 1586, Dec. 14—1656, Mar. 19; b. Medelbye in Schleswig; studied at Flensburg, and Helmstedt; and 1605, became prof. of philosophy in Helmstedt. Two years later he betook himself to theology, and attracted great attention by the breadth and originality of his views. After travelling in Germany, Holland, England, and France, where he made the acquaintance of the most learned men of his time, he returned to Helmstedt 1613, and was appointed prof. of theology. His genius, the depth of his knowledge, and his large experience of the world and of men, acquired in his travels, developed in him a spirit of tolerance toward all who held their religious opinions honestly. Although his dissertations on the Holy Scripture, transubstantiation, communion in one kind, etc., are acknowledged by learned Roman Catholics to be about the most solid and admirable which have been composed by Protestants against the distinctive doctrines of Catholicism, he was, on account of some statements in his work, entitled

CALK—CALL.

De Præcipuis Religionis Christianæ Capitibus (Helmstedt, 1613), which seemed favorable to Rom. Cath. dogmas, and of others in his *Epitome Theologiæ Moralis* (Helmstedt, 1634), *De Tolerantia Reformatorum*, etc. (Helmstedt, 1658), which approached too near the Reformed or Calvinistic standpoint, declared guilty of abominable heresy by the adherents of the letter of the Concordienformel—i. e., the orthodox and dogmatically rigid Lutherans. C. felt keenly that the polemical harshness of Lutheranism was a serious obstacle in the way of a great Catholic Christianity, and that Protestantism must assume another form before it could hope to become the religion of Europe. Under this conviction, C. endeavored to show that the oldest and most fundamental articles of the Christian faith—viz., the facts embodied in the ‘Apostles’ Creed’—were common to all Christian sects. In subsequent dissertations, having stated that the doctrine of the Trinity was less distinctly taught in the Old than in the New Testament, and that good works were necessary to salvation; and finally at the religious conference of Thorn, 1649, whither he was sent as a mediator by the Elector of Brandenburg, having been on more intimate terms with the Calvinistic than the Lutheran theologians, C. was accused of apostasy. Fortunately, however, he had powerful friends, who stood firmly by him, and through their help he was enabled to retain his professorial chair till his death.

CALK, v. *kawk* [OF. *cauquer*, to tread, to place a small roll of lint in a wound: L. *calcāre*, to press or stuff: Gael. *calc*, to ram, to drive]: to close the seams between a ship’s planking with oakum to prevent them admitting water; to point or rough the shoe of a horse to prevent its slipping on ice. CALK’ING, imp. CALKED, pp. *kawkt*. CALK’ER, n. one who. CALKINS, n. plu. *kaw’kins*, the prominent parts of a horse’s shoes sharpened to prevent its slipping on the ice. CALKING, n., the process of copying or transferring a drawing by covering the back side of a design with black lead, or red chalk, and tracing lines through on a waxed plate, or wall, or other matter, by passing lightly over each stroke of the design with a point, which leaves an impression of the color on the plate, paper, or wall.

CALL, v. *kawl* [Icel. *kalla*; Dan. *kalde*, to call, to chatter]: to name; to appoint or designate; to utter a loud sound in order to attract attention; to invite to come; to summon; to warn; to exhort; to visit: N. a summons or invitation; a command; a short visit; a military signal on the trumpet; the demand for a stipulated portion of the payment for a share in a joint-stock operation; there are usually four *calls* at intervals of not less than three months; a divine summons; divine inspiration; in *OE.*, vocation; employment. CAL’LING, imp.: N. business; employment. CALLED, pp. *kawld*. CALL’ER, one who; a visitor. CALL-BIRD, a decoy bird. CALL-BOY, a boy whose duty it is to call actors when their turn comes to appear on the stage. To CALL DOWN, to invite or bring down. To CALL BACK, to bring again; to revoke. To CALL FOR, to claim or require. To CALL IN, to withdraw from circulation; to

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collect. To CALL FORTH, to bring out. To CALL NAMES, to stigmatize with opprobrious epithets. To CALL OFF, to bring away; to divert. To CALL OUT, to summon; to speak aloud; to summon to service; to challenge to fight. To CALL UP, to bring before; to bring to recollection. To CALL UPON, to visit; to invite; to appeal to. To CALL OVER, to read aloud the several items or particulars of anything. To CALL ON, to pay a visit to; to pray to or worship. To CALL AT, to visit a place. To CALL TO MIND, to recollect; to remember. To CALL TO ACCOUNT, to demand explanations from in order to clear up and explain. EFFECTUAL CALLING, in *theol.*, an invitation to believe in Christ which has received the confirmation of the Holy Spirit. CALL TO THE MINISTRY, an invitation to become the pastor of a church from the members. CALL TO THE BAR, formal announcement of the permission of a law student to become a barrister in England and Ireland (see BARRISTER: INNS OF COURT: ADVOCATES, FACULTY OF). CALL OF THE HOUSE, in *parliament*, a special order by the speaker for each member to attend in his place.—SYN. of 'call, v.': to bid; invite; summon; cite; name; denominate; convoke; assemble; collect; exhort; warn; proclaim; invoke; designate;—of 'calling': business; occupation; employment; vocation; trade; office; profession; engagement.

CALL, in theological and ecclesiastical relations: a term with various applications.—1. The command or invitation to believe in Jesus Christ is designated the *call of God*, or the *gospel call*. Calvinistic theologians make a distinction between a *general* call and a *special* or *effectual* call. The former is addressed, they say, to all to whom the word of God comes; but it is insufficient of itself to induce any man to the act of faith, and requires, in order to its efficacy, that it be accompanied by the special and irresistible grace of the Holy Spirit. They are careful, however, to state that the general or outward calling by the word always precedes and accompanies the special and effectual calling by the Spirit. The notion of an inward call by the Spirit of God in the soul, unconnected with outward calling by the word, belongs not to Calvinistic, but to mystic theology.—2. A call to office in the church, and particularly to the ministry of the gospel, is regarded by Christians generally as proceeding from God; and the church of England requires of candidates for ordination an express profession of their trust that they are so moved of the Holy Spirit.—3. A call by the people who are to be under the pastoral care of a minister has been regarded in large denominations of Protestant churches as necessary to the establishment of the pastoral relation; and in denominations where it is not a formal requisite, it is often held to be practically secured through the representative action of proper officials. But among those with whom it is a requisite, there have been great differences of opinion as to what constitutes a sufficient call, and great differences of practice with regard to it. Some of the principal dissensions in Scotch Presbyterianism have had their origin in this question. The election of a pastor by the *Christian people* of

CALL.

his *parish* or *congregation*, has been contended for by many as the true call, or the best kind of it; others, approving of patronage with certain limitations, have contended no less earnestly for the right of the people to be consulted, so that without their concurring by a call, the patron's presentee should not be held entitled to be inducted into the pastoral office; and according to the practice of the Church of Scotland, this concurrence was always at least formally sought. Questions concerning the call and its proper value, supposed to have been determined by the Earl of Aberdeen's Act, passed at the *disruption* of the Church of Scotland, 1843, were not finally settled until the passing of the Act for the Abolition of Patronage (1874), which gives the right of calling to the congregation. See SCOTLAND, CHURCH OF: FREE CHURCH OF SCOTLAND: PATRONAGE.

CALL, BOATSWAIN'S: metal whistle (also its sound) used by the boatswain and his mate on shipboard. Various strains or kinds of sound produced denote signals or orders for hoisting, heaving, lowering, veering, belaying, letting-go, etc. These sounds are as much attended to by seamen as those of the drum, bugle, and trumpet are by soldiers. At one time a gold *call*, with a chain, was the badge of an admiral.

CALL OF THE HOUSE: imperative summons to every member of the British parliament of either house on some particular occasion, when expression of the sense of the whole house is deemed necessary. In the *house of lords*, when any urgent business is deemed to require the attendance of the lords, it has been usual to order the house (its names) to be called over; and this order has sometimes been enforced by fines and imprisonment upon absent lords. On some occasions the lord chancellor has addressed letters to all the peers, desiring their attendance, as on the illness of George III., 1810, Nov. 1. The most important occasion on which the house of lords was called over, in modern times, was 1820, for the trial of Queen Caroline.

When the *house of commons* is ordered to be called over, it is usual to name a day which will enable the members to attend from all parts of the country. The interval between the order and the call has varied from one day to six weeks. If it be really intended to enforce the call, not less than a week or ten days should intervene between the order and the day named for the call. The order for the house to be called over is always accompanied by a resolution, 'that such members as shall not then attend, be sent for, in custody of the serjeant-at-arms.' And it was formerly the custom to desire the speaker to write to all the sheriffs to summon the members to attend. On the day appointed for the call, the order of the day is read and proceeded with, postponed, or discharged, at the pleasure of the house. If proceeded with, the names are called over, according to the counties, arranged alphabetically. The members of a county are called first, and then the members for every city or borough within that county. The counties in England and Wales are called first, and those

CALLA—CALLANDER.

of Scotland and Ireland in their order. This point is mentioned, because it makes a material difference in the time at which a member is required to be in his place. See May's *Proceed. in Parl. on Attendance of Members*.

CALLA, *kă'l'la*: genus of plants of the nat. ord. *Araceæ*, or, according to some botanists, of the nat. ord. *Orontiaceæ*, which is distinguished from *Araceæ* only by having her-



Calla palustris.

maphrodite flowers. The genus *Calla* is characterized by a flat spathe (q.v.), within which is a cylindrical spadix (see SPATHE) covered with naked flowers, appearing as a mere mixture of stamens and pistils, and a one-celled ovary with 6-8 erect ovules. The known species are few, and natives of very different climates. *C. palustris* is found in swamps in continental Europe, Siberia, and N. America. It has a creeping root-stock, and heart-shaped, stalked leaves, the midrib of which is prolonged beyond the blade into a point; the spathe is white, and the spadix yellow. The root-stock is extremely acrid and caustic; but being deprived of its acridity by grinding, boiling, and mascerating, is made by the Laplanders into a kind of bread called *Missebroed*, which they hold in high estimation.—The well-known and beautiful *Richardia Ethiopica* was formerly included in this genus, and is often still called *Calla*.

CALLANDER, *kă'l'lan-dër*: village in Perthshire, Scotland, on the left bank of the Teith, 16 m. n.w. of Stirling. It is in a beautiful and romantic situation surrounded by high mountains and Highland lakes. Hence it is much frequented by tourists, who make this place a centre to visit Benledi, the Trosachs, the Bracklin Falls, and Lochs Lubnaig, Vennachar, Achray, and Katrine. Pop. (1891) 1,538.

CALLANT—CALLERNISH.

CALLANT, n. *kāl'ánt* [Gael. *gille*, a youth; *galan*, a youth, a sapling]: in *Scot.*, a youth: see **GALLANT**.

CALLAO, *kāl-lá'ō* or *kāl-yá'ō*: the port of Lima, cap. of Peru, connected with that city by a railway of 6 m.; lat. 12° s., long. 77° 13' w. Fine harbor-works, with extensive pier and dock accommodations, were completed 1875. The roadstead is large, free from rocks, and safe, sheltered by the island of San Lorenzo. The exports are guano, specie, copper, cotton, bark, and hides. The present C. dates only from 1746, when the original city was destroyed by an earthquake. C. was bombarded 1880, during the war between Chili and Peru. Pop. abt. 20,000.

CALLCOTT, *karol'kūt*, Sir **AUGUSTUS WALL**, R.A.: 1779-1844, Nov.; b. Kensington, London: landscape painter. In 1803, he began to apply himself to landscape painting; in 1810, was made a member of the Royal Acad.; was knighted 1837, and in 1844, made conservator of royal pictures. His landscapes are remarkable for beauty, clear definition of objects, good drawing, and truthful natural coloring. He has been called, not entirely without reason, the English Claude.

CALL'COTT, **JOHN WALL**: musical composer: 1766-1821, May; b. Kensington, London; elder brother of Sir Augustus Wall C. Too nervous to be a surgeon, for which he was intended, he devoted his attention to music, and in 1785 won three of the four gold medals annually given by the Catch Club; the admired *O Sovereign of the willing Soul* being one of the successful pieces. During the next ten years he obtained 20 of the medals given by the same society. In 1785, he was made bachelor, and, five years afterward, doctor of music, at Oxford. In 1805, he published his *Musical Grammar*; in the following year his mind gave way under the continuous strain to which it had been subject. He recovered again, but only for three years, when he relapsed, and continued insane until his death. He was one of the most eminent composers belonging to the British school of music, and especially celebrated for his glee compositions. His choicest productions were published in two vols. by his son-in-law, Mr. Horsley, 1824.

CALLER, a. *kāl'lér* [Icel. *kalr*, fresh: Gael. *cail*, disposition, temper]: in *Scot.*, fresh; pure; in a natural state; having a rosy, healthy appearance.

CALLERNISH, *kāl'lér-nāsh*: district on the w. coast of the island of Lewis, about 16 m. from Stornoway, remarkable for its circles of Standing Stones (q.v.). There are four circles, at no great distance from one another, but without any visible relation. The principal one of which the figure gives a bird's-eye view, is of a more than usually elaborate design. 'A double line of upright stones run parallel to each other in a northerly direction, while a single line of similar stones is projected from the south, east, and west points, thus giving a cruciform figure to the structure. A stone of larger dimensions than any of the others occupies the centre of the circle, and completes the whole. . . . That the position was chosen and laid

CALLET—CALLICHTHYS.

down from astronomical observation, can easily be demonstrated by visiting the spot on a clear night, when it will be found that by bringing the upper part of the single line of stones extending to the s. to bear upon the top of the large stone in the centre of the circle, the apex of that



Callernish Circle.

stone coincides exactly with the pole-star. The stones themselves are not columnar, or shaped into any form; they are simply broad, flat blocks of gneiss—the prevailing rock from the Butt of the Lewis to Barra Head. The following are their dimensions: diameter of circle, about 40 ft.; length of west line, 43 ft.; length of east line, 38 ft.; length of south line, 69 ft.; length of avenue, 270 ft.; breadth of avenue, 27 ft.; average height of stones, 6 to 8 ft.; height of centre stone, 12 ft. There are 13 stones in the circle, including the centre one, 19 in the avenue, 5 in each of the e. and w., and 6 in the s. arm. The measurements of height are taken from the present level; but there is a bed of peat-moss, 4 or 5 ft. thick, through which the stones rise from the clay beneath; this gives a height of 16 to 17 ft. to the centre stone, and from 10 to 13 ft. to the others, exclusive of the foundation.’—*Notice of the Stone Circle at Callernish*, communicated to the Soc. of Antiquaries of Scotland, by Mr. Henry Callender, 1857, March.

CALLET, n. a. *kāl'let* [F. *caillete*, gossip, a tattler: Gael. *caile*, a vulgar girl]: a woman who is a drab, trull, or scold; a vulgar, violent, and unchaste woman.

CALLICHTHYS, *kāl-lik'this* [Gr. *kalos*, beautiful; *ichthys*, a fish]: genus of fishes of the family *Siluridae* (q.v.), having the body almost entirely covered by four rows of large, hard, narrow, scaly plates, two rows on each side. The head is also protected by a sort of helmet. The mouth is small, the teeth very small; two long barbules hang from each angle of the mouth. The species of this genus are natives of warm climates, particularly of S. America. They are interesting because, when the streams or pools which they inhabit dry up, they make their way across the land to some other piece of water, even although at a considerable distance. They also sometimes bury themselves in the mud of wet meadows out of which they are digged. They have no special organs for carrying a supply of water with them, like the climbing perch, but are supposed to retain a little between the plates of their bodies. A still more interesting part of the natural history of these fishes is their making regular nests, generally of

CALLIÈRES BONNEVUE—CALLIONYMUS.

leaves, in which they deposit their eggs, near the margin of the water, at the beginning of the rainy season, the male and female uniting in watching them until they are hatched. These habits are shared by the species of the allied genus *Doras*, in which the lateral plates are broader, keeled, and each ending in a spine.

CALLIÈRES BONNEVUE, *kâ-le-är' bon-vü'*, LOUIS HECTOR, Chevalier de: 1639–1703. He was gov. of Montreal 1684; led the advance of the troops which attacked the Six Nations in N. Y. 1687; went to France to urge that New York city be seized as security against British interference with French dominion in the north; and was made gov. gen. of Canada, 1699.

CALLIGONUM, *käl-lig'on-üm*: a genus of plants of the nat. ord. *Polygoneæ* (q.v.), having a quadrangular fruit (*achene*, q.v.) winged at the angles. The best known species is *C. Pallasia*, a succulent shrub found on the sandy steppes near the Caspian Sea, and in the lower part of the basin of the Volga, where its acid fruit, and its also acid shoots often serve to allay the thirst of the Kalmucks and of weary travellers. Its root strikes deep into the sand, is swollen at its upper part, and, when cut there, gives out a nutritious gum resembling tragacanth (q.v.), which is also obtained by pounding and boiling it, and on which the Kalmucks feed in times of scarcity.

CALLIGRAPHY, or **CALIGRAPHY**, n. *kä-lig'ră-fi* [Gr. *kalos*, beautiful, fair; *grapho*, I write]: elegant or beautiful writing. **CALLIGRAPHIST**, n. *-ră-fist*, one who writes beautifully. **CALLIGRAPHIC**, a. *käl'î-grăf'ik*, pertaining to.

CALLIMACHUS, *käl-lim'a-küs*: eminent poet, grammarian, and critic of the Alexandrian period, about the middle of B.C. 3d c. He was of a distinguished family at Cyrene, in Libya; taught grammar and belles-lettres in Alexandria; was a favorite of Ptolemy Philadelphus, and of his successor, Ptolemy Euergetes; and was made principal librarian of the Alexandrian Library. He wrote many works on the most various subjects (Suidas mentions 800), but only fragments are extant; of his poems the few that remain bear the marks of an age when the artificial had obtained preference over the natural.

CALLINGER, *käl'lin-jér*: one of the hill-forts of Bundelcund (q.v.), about 700 ft. above the adjacent plain, and separated from a neighboring range of mountains by a ravine 1,200 yards in width. It is in lat. 25° n., and long. 80° 32' e.; 112 m. s.w. of Allahabad. From its position and size, C. must formerly have been a place of great strength. It was stormed by the British, 1812. At the s.e. base of the rock stands a town of the same name, which, though now much decayed, yet bears signs of ancient extent and grandeur. The locality is famous for its excavated temples of Siva.

CALLING THE DIET: in Scotch law, the equivalent of *Arraignment* (q.v.): also see **INDICTMENT**: **VERDICT**: **DEFENSE**.

CALLIONYMUS: see **DRAGONET**.

CALLIOPE—CALLOT.

CALLIOPE, n. *kāl-lī'ō-pē* [Gr. and L. the *sweet-voiced*]: in *anc. myth.*, the chief of the nine Muses, the mother of Orpheus,—she presides over eloquence and heroic poetry, said to be mother of Orpheus, of the Sirens, etc. C. was represented usually with a style and wax tablets.

CALLIPERS, n. plu.: see **CALIPERS**.

CALLIRHOE, *kāl-līr'hō-ē*: 'the fountain of nine springs,' near Athens, whose waters flowed through nine channels.

CALLISTHENES, *kāl-līs'the-nēz*, of Olynthus: B.C. 360–328, son of Hero, a cousin of Aristotle. He was educated by Aristotle, together with Alexander the Great. He applied himself to natural and political history, and accompanied Alexander in his expedition to India. He incurred the displeasure of the courtiers and royal favorites, and of Alexander himself, who was displeased by C.'s remonstrating against Alexander's intended assumption of divine honors, and in general by his bold, indiscreet, outspoken ways; and he was put to death on a pretended charge of treason. Only a few fragments of his historic works remain, and these are not valuable. The *History of Alexander* ascribed to him, of which there are several MSS. in the Paris Library, is evidently a production of the 7th c., and rather a romance than a history.

CALLISTRATUS, *kāl-līs'tra-tūs*: Athenian orator, son of Callicrates of Aphidna. One of his speeches, exciting the emulation of Demosthenes, is said to have been the cause of the latter applying himself to oratory. C. had brilliant talents as a statesman, and exercised a dominant influence during the Theban supremacy, as an opponent of Thebes. In B.C. 361, however, he was condemned to death by the Athenians, and went into banishment; returning, he was put to death. Datum, on the Strymonic gulf, is said to have been founded by him during his exile.

CAL'LITHRIX: see **SAGOUIN**.

CAL'LITRIS: see **SANDARACH**.

CALLOSITIES: see **CORNS**.

CALLOT, *kā-lō'*, **JACQUES**: 1592–1635; b. Nancy: French artist. Proceeding to Rome he commenced drawing and engraving under Thomassin in his 18th year. He next went to Florence, where, by numerous spirited etchings, he gained great fame, and engraved for Cosmo II., Grand Duke of Tuscany, a series of plates of court-festivals, etc. When his patron died (1621), C. returned to his native place, and increased his reputation by a copious series of etchings, including six plates of the siege of Breda. By order of Louis XIII., who invited C. to Paris, etchings of the sieges of Rochelle and the Ile Rhé were executed; but C. refused to commemorate by art the capture of his native town, and, declining the pension offered by the king, returned to Nancy, where he died. His activity as an artist was marvellous. Of his engravings, 1,800 are still preserved at Dresden, and are invaluable helps to a vivid conception of the manners, conditions of life, events, etc., in the 17th c. C.'s '*Misères de la Guerre*,' series of 18 plates, are especially celebrated.

CALLOUS—CALLUNA.

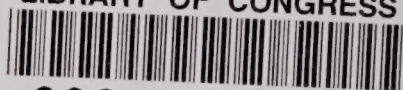
CALLOUS, a. *kāl'lūs* [L. *callōsus*, thick-skinned—from *callus*, hard, thick skin: F. *callex*, callous: Fin. *kallo*, the scalp or skull]: hard; hardened in mind; unfeeling. **CAL'LOUSLY**, ad. *-lī*. **CAL'LOUSNESS**, n. hardness; insensibility to the wants or sufferings of others. **CALLOS'ITY**, n. *-lōs'ī-tī*, a horny hardness on the skin. **CAL'LOSE**, a. *-lōs*, in *bot.*, having hard spots or callosities. **CALLUS**, n. *kāl'lūs*, hardened skin; the hard deposit on the fracture of a bone; in *hort.*, the new formation over the end of a cutting before it puts out rootlets.—**SYN.** of 'callous': unfeeling; obdurate; unsusceptible; hard; hardened.

CALLOW, a. *kāl'lō* [AS. *calo*; Dut. *kael*; Gael. *calbh*, bald: L. *calvus*, bare]: naked; destitute of feathers, as a young bird.

CALLUNA: see **HEATH**.

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